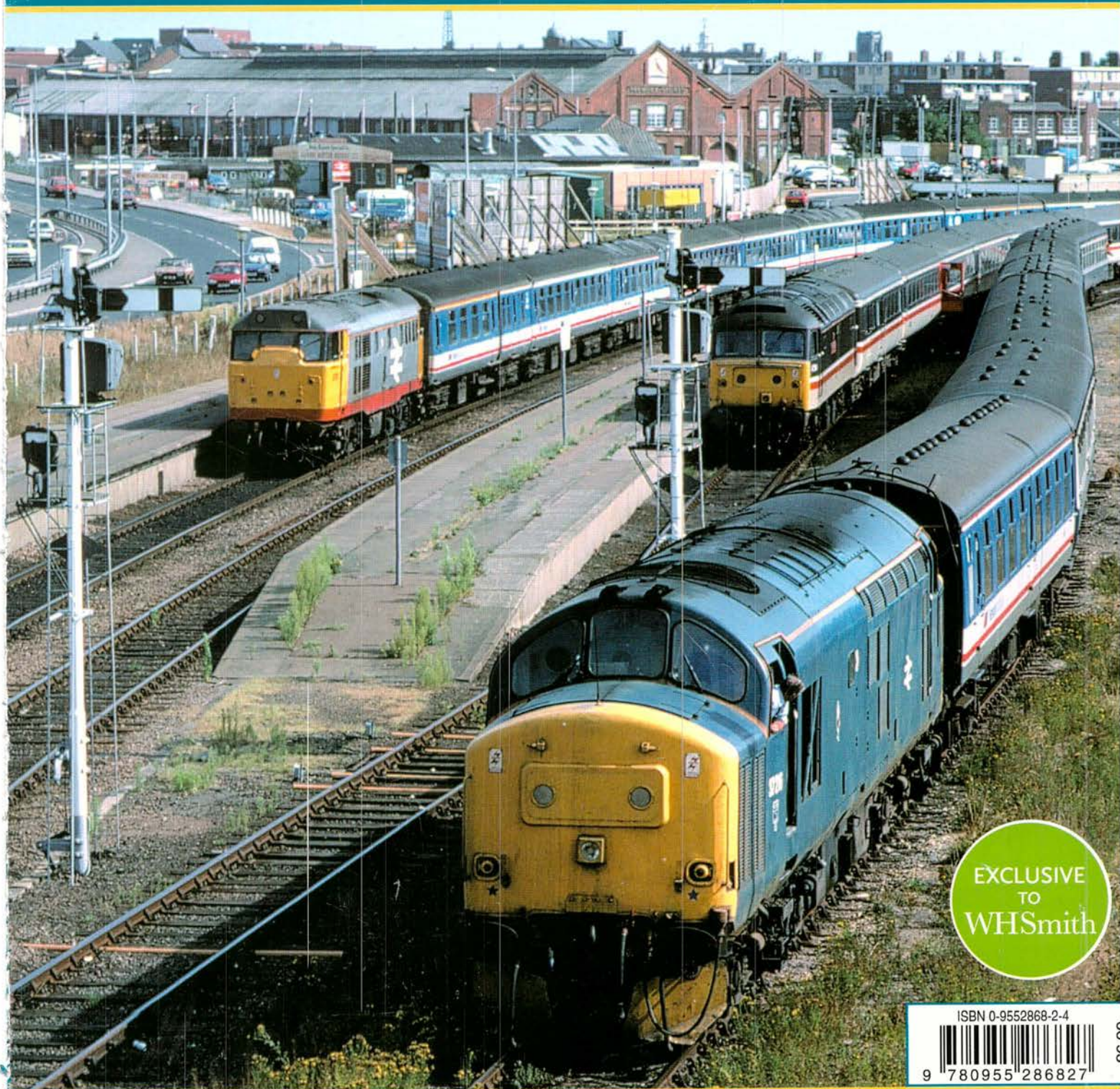




British Railways

Modernisation to Privatisation



EXCLUSIVE
TO
WHSmith

ISBN 0-9552868-2-4



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by Brian Sharpe

50 years of BR Diesels *by Bachmann*

Bringing back nostalgic memories

OO Scale Models



32-042DC Class 20 Diesel D8101 BR Green with Discs/Tablet Catcher Recesses Yellow Ends



32-040DS DCC SOUND Class 20 Diesel D8113 BR Green with Discs/Tablet Catcher (Digital Sound)



32-525DS DCC SOUND Class 55 D9007 'Pinza' Two Tone Green (Digital Sound)



32-405 Class 25/3 Bo-Bo Diesel D7646 BR Two Tone Green



31-342 04 Diesel Shunter D2264 BR Green Late Crest



32-478 Class 40 Diesel D210 'Empress Of Britain' BR Green Indicator Discs



32-113 08 Diesel Shunter D3032 BR Green Hinged Door Type



32-800 Class 47 Diesel D1500 Two Tone Green Half Yellow Ends 4 Digit Head Code



32-801 Class 47 Diesel 1764 Two Tone Green Full Yellow Ends 4 Digit Head Code

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COVER: When the BR sectors hired locomotives and stock to each other, particularly on summer Saturdays; BR blue-liveried Class 37 No 37216 and Railfreight-liveried Class 31 No 31187 with Network SouthEast stock head summer Saturday extras for the Midlands at Yarmouth on 11 August 1990, while an Inter-City Class 47 with matching stock waits with a Liverpool Street train.

Background photo: Class 47 No 47643
waits at Edinburgh Waverley on the
evening of 3 September 1987.

All pictures by the author except
where stated otherwise





The modernisation of BR

While enthusiasm for the great days of steam shows no sign of waning, those days ended more than 40 years ago, and the era that followed it on Britain's railways is now all but over as well – the era of the diesel (or electric) hauled train. Just as any 50 year period of railway history saw dramatic and far-reaching changes during the steam age, so the last 50 years has seen progress that goes far beyond just a change in the principal form of traction. Today's privatised railway system is operated almost exclusively by multiple-units on passenger trains and a limited number of classes of modern high-powered diesels for freight traffic. Even the nominally locomotive-hauled (or propelled) trains such as the High-Speed Trains and the East Coast Main Line electrics, highly successful as they are, hold little appeal to the traditional railway enthusiast. The circumstances of privatisation, though, have led to a revival in the fortunes of some of the classes of 'first-generation' diesels which had previously all but disappeared. Two generations of enthusiasts who never experienced the age of steam at first hand have now seen their favourite

classes of traction come and go. The changes to Britain's railways have been profound and ongoing, and it is appropriate to look back at these changes, particularly the motive power scene, and also to look at the achievements of the dedicated band which has saved so many classic types of BR diesel and keep them operational on heritage lines and even on the Network Rail system.

The railway system itself has, of course, changed dramatically, with the modernisation of BR's traction fleet coinciding with the drastic downsizing of the network under Dr Beeching's axe. Goods yards and rural stations closed, wagon-load freight traffic dwindled and died, semaphore signaling was replaced by multiple-aspect colour lights, and electrification and station rebuilding totally transformed the appearance of Britain's railways. Set against a background of Britain's varied and spectacular scenery, the story is colourful, with the change from steam-age Brunswick green engines with maroon coaches, through the long-lived and all-pervading corporate blue, to sectorisation, then the explosion of colour schemes under privatisation.



Left The early days of dieselisation saw diesels simply take over steam-age workings which remained otherwise unchanged for many years. Class 31 No 31421 leaves Hadley Wood with a Great Northern line suburban train of decidedly old-fashioned non-corridor stock from Moorgate in 1975.

Below Even in 2006, it was possible to see a 1960s-era BR green diesel hauling matching maroon Mk1 stock on the main line. No 37411 *Loch Rannoch* passes Golant on the freight-only Carne Point branch in Cornwall with a railtour returning to Plymouth on 31 May 2006.





The Diesel Builders

The GWR, SR, LMS and LNER all looked into modern traction in some form, but only the LMS had actually operated a main line diesel before nationalisation in 1948. The early experiments continued, still on a regional basis with little national co-ordination, but in 1955, when the British Transport Commission's modernisation plan for British Railways was announced, it was for the whole system, although decisions would still be taken on a regional basis.

Technology had advanced by then and none of the pre-nationalisation designs were perpetuated in series production by BR, although many major components were.

BR was still preoccupied with building and maintaining its steam engines, but the established private locomotive builders had, in many cases, already diversified into diesel production for overseas customers, with virtually no orders coming from

the domestic main line market, steam or diesel, at that time. Suddenly a whole new market opened up for these private manufacturers and they were all quick to grab the opportunity. Diesels and electrics are not like steam engines, which are generally built as one unit. A diesel locomotive consists of bodywork and running gear, which railway workshops could quickly adapt to, plus a power unit and electrical installation and traction motors or hydraulic transmission.

These component parts were to come from a variety of specialist manufacturers, some of which adapted to the changeover from steam better than others. The variety of new diesel types introduced in a very short period was the result of having an almost infinite number of permutations of combinations of body, engine, electrics and transmission, each different permutation resulting in a new class or sub-class.

The main manufacturers of finished locomotives were:

British Railways: Various workshops, (also LMS Derby).

English Electric. The only manufacturer to build complete diesel locomotives, including power unit and traction motors.

Brush Traction, originally Falcon Engineering, Loughborough. Part of Hawker-Siddeley Group from 1957. Built bodies, running gear and electric traction equipment, but not engines.

Birmingham Railway Carriage & Wagon Co. Carriage and wagon manufacturers from 1855, the company became involved in multiple-unit production for BR, then diesel locomotives, but folded in 1963.

North British Locomotive Company, Glasgow. A well-established steam locomotive builder, built diesel locomotive bodies and running gear, but did not handle the change to modern traction well and folded.

The Clayton Equipment Company of Hatton, grew from the Clayton Carriage & Wagon Company in 1931. Later to specialise in narrow gauge mining locomotives, the company built a diverse range of other products and ultimately became part of Rolls-Royce.

Robert Stephenson & Hawthorns. Oldest established steam locomotive builders on Tyneside, built and assembled locomotives for English Electric.

Yorkshire Engine Company, steam locomotive builders, built diesel locomotives in association with BTH.

Vulcan Foundry, Newton-le-Willows. Steam locomotive builders, later part of English Electric

Metropolitan-Vickers, Trafford Park, Manchester. The company had its origins in the US Westinghouse Co, but from 1916 was independent from US control. In 1919, British Westinghouse itself was acquired by Vickers Limited. The company's name changed from 'Vickers Electrical' to 'Metropolitan Vickers Electrical'.

Beyer Peacock. Established steam locomotive builders in Manchester.



The principal producers of diesel power units:

Sulzer. The Swiss company started diesel engine production at Winterthur in 1903. In 1912 it was involved with Krupp in building the world's first diesel locomotive for the Prussian-Saxon State Railway.

Mirrlees. Dating back to 1840, established diesel engine producer and part of the Brush Group from 1945. Merged with Blackstone, another HS Group company in 1969.

Davey Paxman & Co of Colchester. Founded in 1855, manufacturers of diesel engines, part of MAN B&W Group from 2000.

Ruston Engine Co. of Lincoln. Well-known producers of road locomotives. Later part of Ruston-Hornsby

Crossley Brothers. Manchester company founded in 1867, best-known for bus production in later years. MAN. Well-known German company, producer of lorries.

D Napier & Son of Manchester. Part of English Electric, diesel engine manufacturer.

Maybach. German company set up in 1907 by Wilhelm Maybach, once partner of Daimler and designer of the first Mercedes car. Produced engines for Zeppelin airships.

Blackstone. Stamford, Lincolnshire, now with Mirrlees, part of the MAN Group.

As an example, BR designed and built the 1Co-Co1 Type 4 using a 2350hp Sulzer engine and Crompton traction motors. This became known as the Class 44. The same bodywork but a 2500hp Sulzer engine and the same traction equipment produced the Class 45, and the same bodywork and engine but with Brush traction equipment resulted in the Class 46. When Brush took a virtually identical but 2750hp Sulzer engine and put it in its own design of bodywork, with Brush traction motors like the Class 46, but six-wheeled bogies, we get the very different-looking Class 47 Co-Co.

Many of these companies were already household names,

as builders of steam locomotives, builders of diesel engines for road or marine use, or as electrical contractors. The experience of building Britain's first main line diesel locomotives made some into highly successful companies while unfortunately it led to financial ruin for others.

Builders of hydraulic transmissions:

J M Voith, German company.

Mekydro, German company.

Electrical equipment and traction motors:

AEI (Associated Electrical Industries Limited). Parent company of BTH and Metrovick.

Crompton-Parkinson. Crompton Lighting is one of the oldest lighting companies in the world, founded in 1878.

Crompton-Parkinson was founded in 1927 and taken over by the Hawker Siddeley aerospace group in 1968.

BTH (British Thomson-Houston). Part of AEI from 1929, with Metropolitan-Vickers.

GEC. The General Electric Apparatus Co was started by two German immigrants. In 1967, GEC acquired AEI, including Metropolitan-Vickers, BTH and Siemens. In 1968, GEC-AEI merged with English Electric, along with Ruston-Hornsby, Robert Stephenson & Hawthorns and Vulcan Foundry.

Above left Towards the end of regular locomotive-hauled passenger workings on cross-country routes, a Birmingham RCW/ Sulzer Type 3 (Class 33) passes Claverdon with a Cardiff – Portsmouth train on 27 March 1988.

Above Always predominantly freight engines, English Electric Type 3s (Class 37s) performed some of their best long-distance work in pairs after refurbishment. Nos 37516 and 37518 pass Langham Junction, Rutland, with the Lackenby – Corby steel coils train on 6 October 1987.



Above Looking almost like a train from the 1960s, preserved Deltic D9009 *Alycidon* speeds south near Gleneagles with a railtour on 24 June 2003.

Above right EWS No 37405 arrives at Ribbleshead with an Arriva Trains Carlisle – Knaresborough train in October 2003.

Right BR blue class 31 No 31253 passes Shipley with a lengthy parcels train, with many pre-Nationalisation vehicles on 31 May 1975.





Modern Traction

Some early diesel, electric and gas-turbine locomotives bore more of a resemblance to steam engines than might be expected, even to the extent of using similar wheel arrangements, like the Fell 4-4-4 and the GT3 gas-turbine 4-6-0 complete with tender.

Usually though, apart from shunters which were either 0-4-0 or 0-6-0, most modern diesel and electric locomotives ran on bogies. A system was devised for the classification of wheel arrangements where A=1, B=2 and C=3, so two four-wheel bogies was B-B and two six-wheel bogies was C-C. If all axles on a bogie had separate traction motors, then o was added, so many designs were Bo-Bo or Co-Co.

The main exceptions were where non-powered axles were added to help distribute weight. A 1Co-Co1 has two eight-wheel bogies, with traction motors only on the inner three axles of each bogie, while an A1A-A1A has two six-wheel bogies, with the centre axle of each unpowered.

Although diesel engines were rated in horse power, not all of the power is transmitted to the rail, and the size and number of wheels will also dictate the locomotive's haulage capacity. While steam engines had power classifications from 0-9 which had developed from the LMS system, and which was initially also applied to diesels and electrics, a new system was introduced for modern traction, simply using types 1 to 5.

Type 1: 800 to 1000hp

Type 2: 1000-1365hp

Type 3: 1500-1750hp

Type 4: 2000-2750hp

Type 5: over 3000hp

Diesels (and electrics) initially followed steam traditions, carrying the same liveries and sporting headlamps or white headcode discs. These details gradually developed though. The first LMS and SR diesels, designed to operate in multiple, had connecting end doors, a feature perpetuated well into the 1960s but very rarely ever used. Fitting of doors was discontinued, and they were eventually sealed up.

An alpha-numeric code came into use, two-character on SR electric units and four-character elsewhere, and it was soon

decided to use headcode boxes instead of white disc headcodes. This overlapped a little with front end doors, so split headcode boxes were typical for a year or two until end doors were no longer fitted and were eventually removed, from when headcode boxes were central, if not above the cab windows. Train heating progressed from steam, complete with boilers and water trough pickups, to electric. Braking systems progressed from vacuum to air. Headlights, standard throughout the world, but not Britain, were a long time coming.

In the meantime and as speeds increased, the steam age red buffer beam was first superseded by the yellow warning panel, and then the full yellow end. Only with the eventual introduction of high-intensity headlamps could the amount of front-end yellow be reduced slightly.

With the spread of power signalling, it became unnecessary for signalmen in manual 'boxes to identify each train, and the headcode boxes became superfluous, often simply showing two white discs until they were removed completely.

The LMS diesels were Nos 10000 and 10001. BR initially decided to continue the 10000 number series for diesels and 20000 series for electrics. Once large scale production commenced, new diesels began to be numbered in the series D1 to D9999. New West Coast Main Line electrics were numbered from E3000, and SR electrics from E5000, but ER electrics remained in the 26000 and 27000 series but with an E prefix. The D prefix remained on diesels until the end of steam in 1968, from when it was progressively removed, except from the Western Class 52s which had cast number plates.

TOPS (Total Operations Processing System) introduced a completely new computer-based system in 1973 where each class had a two-digit number, and the individual engine was identified by a further three digits.

A Brush Type 2 became a Class 31, but D5501 became No 31001, and the first engine of the class frequently took the first gap, if available due to scrapping or rebuilding. For example D5500 became 31018, but in the case of the Deltics, D9000 became No 55022. Again the Westerns never carried the new numbers. In many cases there were sub classes and D1500 became 47401 of Class 47/4 (ETH generator-fitted) while D1521 became No 47001 of Class 47/0 (non-ETH).



Main LMS Nos 10000 and 10001, dating from 1947/8, worked until 1966 and 1963 respectively. The pair head up the 'Royal Scot' through Lichfield on 23 May 1959. COLOUR-RAIL

Bottom left No 10800 was effectively the prototype Type 1 diesel, ordered by the LMS and completed by North British in 1950, but the production version was never quite as good as the later EE version, which simply entered service in large numbers from 1957, and can still be seen on the national network in the 21st century. COLOUR-RAIL

Bottom right The GWR went its own way as usual and ordered a gas-turbine locomotive in 1940. No 18000 was an A1A-A1A locomotive built by Brown Boveri of Switzerland, which was not delivered until 1949 and worked for only 10 years before being stored at Swindon Works in August 1959. It was then sold to AEI for testing in conjunction with the WCML electrification and moved to Rugby in May 1961, moving to Swindon in June 1963 before returning to Switzerland. It then had various roles as a test locomotive, involving the removal of its gas turbine, generator and traction motors, until 1975, when it was dumped out of use before being bought for preservation in the UK in late 1993. No 18000 was officially handed over to Pete Waterman at Wembley on 27 June 1994 and moved to the Railway Age at Crewe. The WR had a second gas turbine; the UK-designed No 18100 from Metropolitan Vickers, a Co-Co, delivered in 1951. Although successful, it was converted to be the prototype AC electric locomotive for the WCML, but this career was brief. When finally scrapped in 1973, E2001 still carried original black and silver livery. FRED KERR

Early Diesel Prototypes

The first main line diesel in Britain to be of any use was the LMS Co-Co No 10000, but it was only the equal of a medium-sized mixed traffic steam engine, so a second had to be built, and the two operated as a pair on top-link WCML expresses. BR's Southern Region also had a pair of more powerful and slightly more modern diesels in the early 1950s, joined by a third, and these five engines performed well into the 1960s. Generally though, it was wise for a private manufacturer to build a prototype and thoroughly test it before expecting BR to commit itself to purchasing large numbers. Technology moved on, though, while these prototypes were being thoroughly tested and, however successful the prototype was, the production version, if ordered, was often a very different animal.





SR Nos 10201 – 3 were joined by the LMS pair on the SR, but all five then moved to the LMR and also worked until 1962/3. Incredibly, all five of these historic locomotives were scrapped. No 10203 in original black livery is seen at Eastleigh Works in 1954. COLOUR-RAIL



The prototype Deltic was aimed at the export market, and BR simply provided facilities for testing it. After several years' hard work, resulting in BR buying 22 of them, the prototype was donated to the Science Museum and is now in the National Railway Museum.



Brush also tested a gas-turbine locomotive, which externally owed more to steam design than modern traction. The future was clearly diesel and electric though, and GT3 was withdrawn in 1962 and broken up in 1969. The distinctive locomotive is seen on the GC at Wendover in 1961. COLOUR-RAIL



A successful type 4 Co-Co was clearly going to be the winning design, and the BRCW's D0260 *Lion* looked certain to be one of the favourites. It suffered some problems, though, and the BRCW did not have the resources to develop it, and it was scrapped in 1963. *Lion* passes Warwick with a Paddington – Birkenhead express. COLOUR-RAIL



The Brush prototype D0280 *Falcon* became the hot favourite, but although Brush came up with its production Type 4 Co-Co, it used the Sulzer engine from *Lion*. *Falcon* was sold to BR in 1970 and became the solitary Class 53. It spent much of its time pottering around Newport until withdrawn in 1975 and scrapped. It is seen at Ebbw Junction on 15 February 1975.



English Electric's prototype Co-Co DP2 was highly successful but perhaps came too late. It was wrecked in a derailment at Thirsk in 1967 after five years of successful operation. In the same year, the production version emerged, but the Class 50 never outshone Brush's Class 47 in long term service. While in WCML service, DP2 approaches Northchurch Tunnel in 1962. COLOUR-RAIL



There was a need for a Type 5 freight engine and Brush came up with HS4000 *Kestrel*. It was good but too heavy and some modifications had to be made. BR was never convinced and Brush sold it to the Soviet Union in 1971, where it is thought it has now been scrapped. When Type 5 freight engines were eventually built, none had quite the style of *Kestrel*, nor were they as powerful. The 4000hp locomotive is seen at Crewe when new. COLOUR-RAIL



Above BTH Type 1 D8234 was used as a mobile train-heating unit. It stands at Gateshead on 16 June 1972 in the company of Brush Type 4 No 1733.

Left The Class 28 Metrovick Co-Bos proved poor performers in traffic and spent their latter years allocated between Carlisle Upperby and Barrow depots for working the Furness routes; on 20 August 1966 D5707 and D5719 were stabled on Upperby depot awaiting their next duties. FRED KERR

Below New diesel depots were built in all parts of Britain, many now long-demolished. The new Eastfield depot in Glasgow still played host to surviving North British Type 2 Bo-Bos on 29 July 1971.





Early Diesel Classes

Not all of the classes of diesel introduced by BR in the early days of modernisation were entirely successful. In some cases, similar types were ordered from various manufacturers in bulk and a decision made as to which type to perpetuate, after they had been in service for some years.

The D8400-series (Class 16) Type 1 Bo-Bos only numbered 20, as did the Metrovick Co-Bos. The diesel-hydraulic

D600 A1A-A1A Warships only numbered five, before a lighter but more powerful version became available. The diesel-electric North British Type 2s were disastrous in Scotland, but the hydraulic version performed well on the Western Region. The 3300hp Napier-engined Deltic was one of the triumphs of 'dieselization', but the 10 examples of the Type 2 version with just one power unit, the 'Baby Deltic', were hopeless.

Above The Class 23 'Baby Deltic' Type 2 Bo-Bos were EE's only real failure in locomotive design. Only 10 were built, and they spent most of their time out of action awaiting major rebuilding. Confined to GNR suburban services, D5900 stands at King's Cross in May 1965. COLOUR-RAIL

Below right Many of the North British Type 2 diesel-hydraulic (Class 22) fleet spent their last days on mundane duties such as on 10 October 1971 when D6334 was undertaking stock shunting at Exeter. FRED KERR



Class 03 - 13



0-4-0 & 0-6-0 diesel shunters

The diesel engine had been around for a long time and it was obviously ideally suited to railway applications. Initially, the type of power units being built were more suitable for low-speed, low-powered shunting engines, and this was just the work where a diesel had a distinct advantage over steam, as it is often a round-the-clock operation, where stopping for watering or cleaning the fire on a regular basis is inconvenient.

Petrol and diesel shunters were in widespread use in industry by the time of nationalisation in 1948. The Big Four all built some diesel shunters and they proved a great success; the designs being remarkably similar on all lines.

The newly-formed British Railways regions built more, and it was not long before BR started investing heavily in 350hp 0-6-0 diesel-mechanical shunters, based on the later LMS design, of which many were by then in service; 1193 virtually identical locomotives were built, all by BR workshops, but with power units from various manufacturers (mainly English Electric) between 1952

and 1962, and these became an integral part of the BR system. No further design has ever been produced, and although shunting is now a tiny fraction of what it once was, the 350hp Class 08s remain in use across the system more than 50 years later.

The only variation to the standard shunting design to be seen in any quantity was a smaller type of 0-6-0 with a 204hp Gardner engine, of which BR built 228, later to become Class 03, and the Drewry Car Co built 72 which became Class 04. The last of these was withdrawn by 1990, although many survived in industrial service and can still be seen in preservation.

There were numerous other lower-powered and lighter designs, produced by a number of manufacturers to 0-4-0 or 0-6-0 configurations. Many of these designs had already been produced in large quantities for industrial service, but surprisingly neither the 03/04 or 08/09 design was ever built new for industry, although they were to prove very popular second-hand as BR steadily withdrew them from service.

'Gronks'



Top In immaculate black livery, Class 08 350hp 0-6-0 shunter No 08867 heads a transfer freight from Tees Yard towards Middlesbrough on 17 August 1989.

Above The Class 03 204hp shunters still found employment on station pilot duties until the 1970s, but such duties no longer exist. No 03089 is at the new Bradford Interchange station on 20 March 1976. Exchange station is in the course of being demolished.

Main 204hp and 350hp 0-6-0 diesel shunters D2112 and D3871 moved back from preservation to commercial operation. The pair combine to move one of the regular Redland stone trains from Mountsorrel quarries over the swing bridge into Boston Docks on 3 October 2002

Left One of the smaller classes of diesel shunter was the Hunslet 0-6-0. D2595 is preserved and was on the East Lancashire Railway at Bury on 17 June 1989.

Class 20



English Electric Type 1 Bo-Bo

At the same time as BR was starting to modernise its traction fleet, the railway system itself was about to change, but sometimes those in charge of motive power matters did not appear to see the bigger picture. In the 1950s, much on the railways had not changed much for a hundred years and ageing 0-6-0s still shuffled around on branch goods trains and passenger trains. Moderately-powered diesels were purchased in large numbers to simply replace these steam engines, with no thought that the duties they performed might soon become a thing of the past.

Type 1 single-ended Bo-Bos of around 1000hp were ordered from a number of manufacturers, of which the D8200 series and D8400 series found themselves on Great Eastern and North London line freight and empty stock

duties, the former satisfactorily and the latter less so.

Locomotives in the English Electric D8000 series were tried on the London Midland, Eastern, North Eastern and Scottish regions from June 1957 and proved a good design, but after 128 had been built, BR ordered no more. Instead it opted for the 900hp Clayton centre-cab design, of which 117 were built before it was realised how bad they were, and a substantial extra batch of the English Electric design was ordered, taking the number series on from D8128 to D8199, then from D8300 to D8327.

Initially, the EE Type 1 was envisaged as operating singly nose-first on branch passenger and goods, and suburban and stopping passenger trains. By the time the last one was delivered in February 1968, the Beeching axe had swung with a vengeance and there was little such work for them.



'Choppers'



They were found to be much more useful operating nose-to-nose in pairs on heavy coal traffic, in a style similar to the Midland Railway's small engine policy of 80 years earlier.

The Class 20s will be remembered for their work in the Nottinghamshire coalfield, but when they had a little less to do at weekends, they had a fling for many years on summer Saturday holiday trains to the east coast.

The class was the first main line diesel type to be built in large quantities for BR and will also be remembered as having pioneered the concept of privatization. The contraction of coal traffic, particularly in the Midlands, led to their withdrawal by BR before privatization in 1994, but by then Hunslet-Barclay had refurbished a small fleet for use on weedkilling trains under contract to BR. Even well into the 21st century, Direct Rail Services still uses Class 20s on long-distance freight haulage.

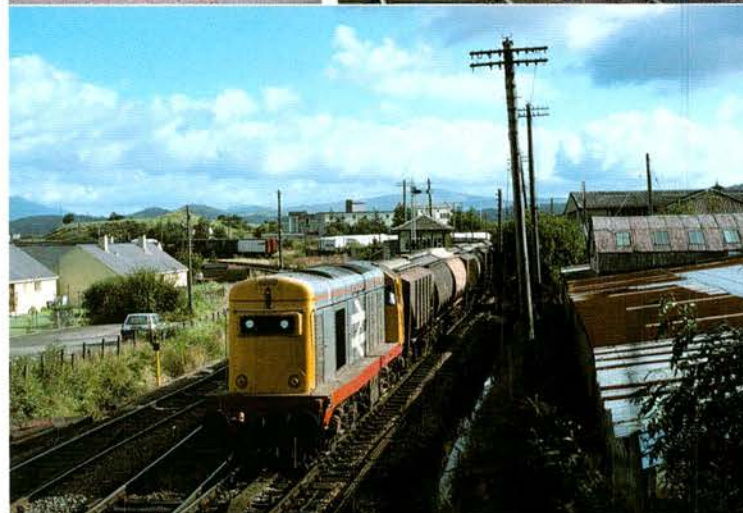
Above left Class 20s Nos 20108 and 20215 in Railfreight livery departing from Toton yard with a Merry-go-Round coal train on 13 October 1989 is typical of the duties members of the class performed for much of their lives.

Above right After a gap of many years, Class 20s saw main line passenger action in 2006, to the east coast no less. Harry Needle Railroad Company Nos 20906 and 20168 bring up the rear of a Norwich to Lowestoft train at Reedham during an Association of Community Rail Partnerships event on 24 September 2005.

Left On a train that belongs to a different age, but the work the type was designed for, D8002 passes Castlethorpe Troughs on a WCML outer suburban train in August 1958. COLOUR-RAIL

Right Although designed for local passenger work, Class 20s became more associated with long-distance passenger haulage in pairs, particularly to the east coast on summer Saturdays. Nos 20172 and 20157 pass Heckington, still with its Great Northern somersault signal, on 6 September 1975.

Left In later years it was rare to see a Class 20 alone, but one was stationed at Fort William for shunting and trip work. No 20138 shunts at Mallaig Junction, Fort William on 1 September 1987.



Class 31



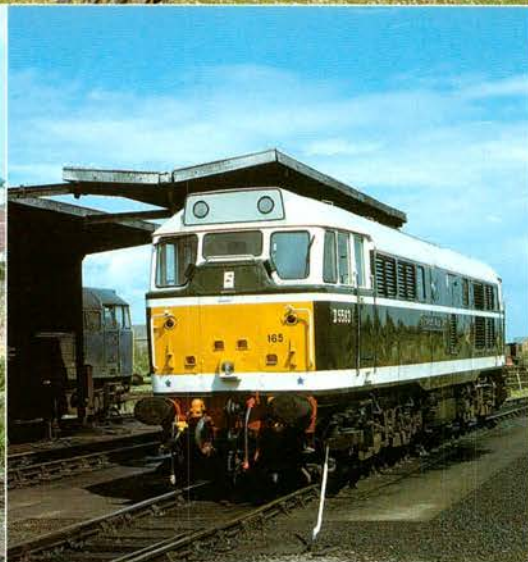
Brush Type 2 A1A-A1A

'Goyle's'

As with the Type 1s, a number of different Type 2 designs were built in considerable numbers, with comparatively little testing having taken place. The Eastern Region was particularly keen to dieselise, and had identified East Anglia as the first area to be rendered steamless. Brush Traction's type 2 design was the biggest and heaviest on offer, at 107 tons, of an A1A-A1A design with a 1250hp Mirrlees engine, but the ER invested in 20 for East Anglian duties, D5500-D5519, which entered service at the end of 1957.

Later-built engines had engines uprated to 1365hp and all were allocated to the ER, the class finally totalling 263,

D5699 being followed by D5800-D5862. They were re-engined with 1470hp English Electric power units from 1964 and this was to ensure they became the longest-serving Type 2 design, the last handful remaining in service right up to 2000, long enough for No 31466 even to carry EWS livery. Used for general freight and coal traffic, suburban and cross-country passenger trains, on empty stock work and double headed on summer Saturday extras, these were exactly the duties which were contracting as the railways were modernised. The reduction in the class's duties on the ER led to many becoming available for transfer to the WR as diesel-hydraulic types needed to be replaced, and later



many moved to the LMR, the class becoming rare on former ER metals in their later years.

A lot were nominated mainly for infrastructure duties towards the end, but 69 locomotives received electric train heating equipment, becoming Class 31/4 and these remained in use on passenger duties on the Norwich – Birmingham, Hope Valley and even Leeds – Carlisle routes into the 1990s.

A substantial number of the class remain, in private preservation, but Fragonset Railways, now FM Rail bought a number for further main line use, and these can still be seen regularly in all parts of Britain.

Main Although now assigned to infrastructure duties and carrying the 'Dutch' livery, Class 31s were regular power in the last summer of locomotive-hauled trains on the Cambrian Coast route. Nos 31147 and 31146 round the coast of the Dovey estuary at Penhelig with a train of Regional Railways' coaches bound for Pwllheli on 6 June 1992.

Right Several Class 31s have been restored to original BR green livery by main line operators. No 31165 as D5583 is on the now-demolished March shed on 9 June 1990.

Top The original Brush Type 2 was preserved by the National Railway Museum and made a surprise appearance at a North Yorkshire Moors Railway gala weekend. Restored to original livery, D5500 leaves Goathland on 23 April 1978.

Middle In the Railfreight era, Class 31s Nos 31268 and 31224 depart from Whitmoor yard at March with an infrastructure train on 7 August 1989. Whitmoor yard was to close, along with March shed, but the yard was reinstated in 2004.

Class 40



English Electric Type 4 1Co-Co1

The first successful main line diesels were the two LMS-designed Co-Cos with English Electric equipment, but they only produced 1600hp. The Southern Region-designed diesels had the same engine but now developing 1750hp, but were 1Co-Co1s with two long heavy bogies, which in themselves contributed to the extra weight of the locomotives.

It was English Electric which effectively combined the best points of the two designs to which it had contributed the power units, and came up with the first big main line diesel to run in Britain in large quantities.

The English Electric engine, which had been used in both the LMS and SR designs, had now been uprated to 2000hp in a single unit; but although it was only five tons heavier, this was mostly due to it being given the big bogies from the SR design, while the external bodywork styling was influenced more by the LMS design.

Produced entirely by English Electric, which was at the forefront of diesel locomotive design and production, the 2000hp Type 4 1Co-Co1s were intended for top-link passenger and freight work on two of the premier main lines, the East Coast and West Coast routes. The first six though, D200-D205, went in March 1958 to Stratford shed in east London for Liverpool Street to Norwich expresses

where they replaced BR-built Britannia Pacifics, which were only seven years old.

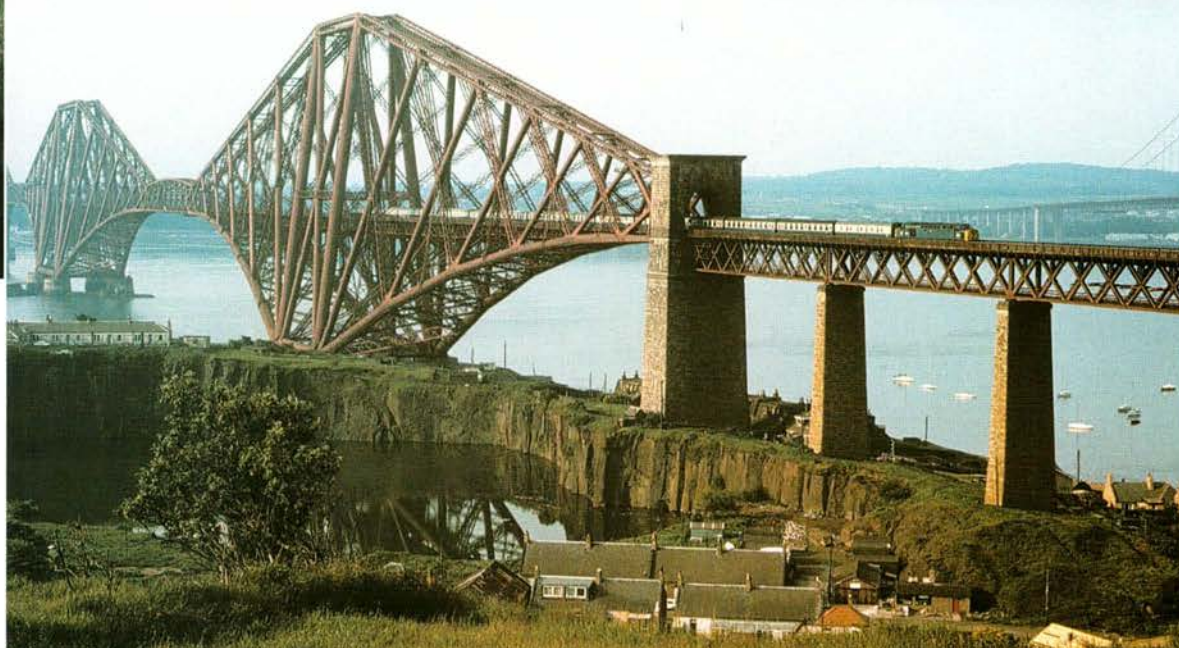
There were clearly steam and diesel factions within BR, and Riddles, who had designed the Britannias, was a steam man and no doubt was thought by others to be obstructing progress. He is even on record as stating that dieselisation would never take hold of Britain's railways as it had in the United States.

Sometimes a private builder would build a prototype, which would be exhaustively tested on various routes on various regions before one or more regions would decide to invest in a batch. In the case of the EE Type 4s, the ER was happy to accept 10 to begin with, and the LMR ordered the next 27 even before the first 10 had been delivered. These were given the names of merchant ships, the first BR diesels to be named.

There were sufficient similarities with earlier designs which had proved reliable for the risk of buying in bulk 'off-the-shelf' to be considered acceptable. In all, 200 of the class were built. Unfortunately, similar bulk purchases of other designs in the future were to prove disastrous.

The 2000hp Type 4s were useful on the ECML but not the equal of a Pacific and, although they remained associated with the route, they were never front-line power. The WCML was different though. As electrification work was

Whistlers'



commencing, and with no difficult schedules to maintain as a result of ongoing major engineering work, these Type 4 diesels proved ideal for several years.

The Type 4s also proved themselves on Trans-Pennine expresses, the Settle & Carlisle and many Scottish routes, working passenger and goods trains. After electrification from Euston to Crewe, the class remained associated with the North Wales Coast for many years. Gradually cascaded down to more mundane jobs as newer power was introduced, the Class 40s remained in service right up to 1985, a long and glorious career, but more reliable than glamorous. Their sphere of operation was never widened much, although they began to be seen more regularly working into South Wales later in their career.

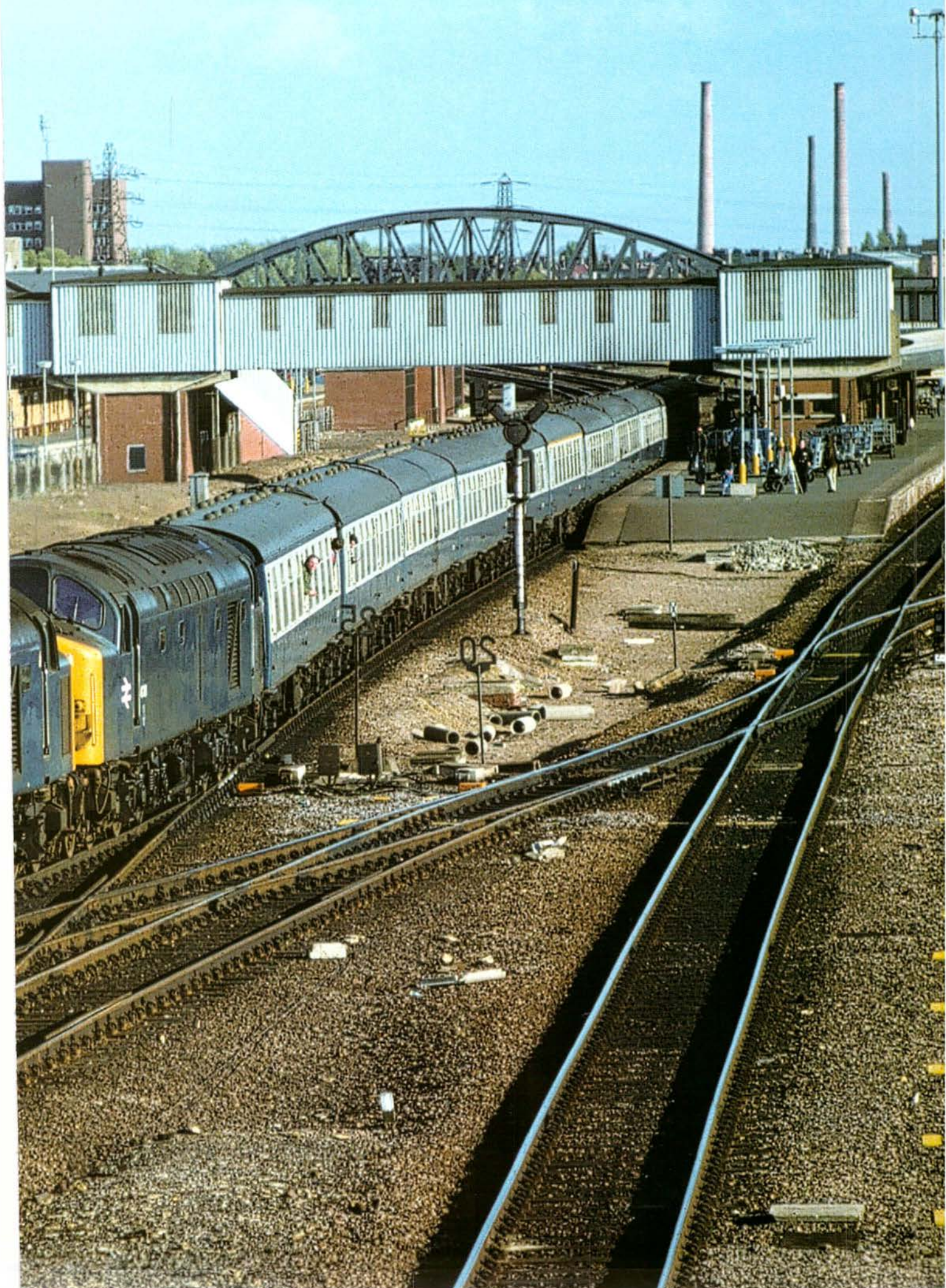
Main Although the class was virtually extinct by 1985, an exception was the original English Electric Type 4 D200, which was returned to service by BR for special duties, in green livery but with obligatory all-yellow ends. It found regular employment on Settle & Carlisle passenger trains and climbs the 'Long Drag' past Sherriffs Brow on 20 June 1987. It was finally withdrawn in May 1988 and presented to the National Railway Museum.

Top In later years, the Class 40s were associated with heavy freight service, particularly in the north-west. No 40093 approaches Widnes from the Warrington line on 24 October 1975.

Above Originally earmarked for east coast and west coast main line express service, the Class 40s saw nearly 30 years' service. No 40084 crosses the Forth Bridge with an Aberdeen express on 7 June 1975.

Over page Double-headed Class 40s were never a common sight. No 40013 *Andania* and No 40081 heading north out of Peterborough on 1 May 1982 are on the 'Anglian Whistler' railtour returning to Manchester.





Class 24



Above A typical Class 24 working in the 1970s, No 24004 is on a parcels train at Manchester Exchange on 1 February 1975.

Right Preserved BR/Sulzer Type 2 D5054 leaves Oxenhope on the Keighley & Worth Valley Railway on 6 November 1988.



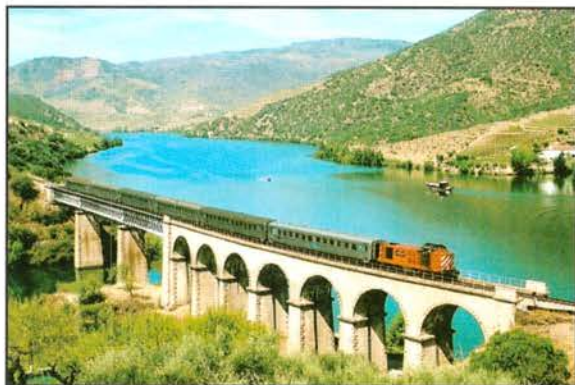
BR/Sulzer Type 2 Bo-Bo

The next type 2 design was the first class of diesel to be designed and built by BR itself, and used a Sulzer engine and BTH traction equipment. Hard on the heels of the big Brush Type 2, came the 1160hp BR/Sulzer Type 2, a much lighter Bo-Bo design at 77 tons as opposed to 107 tons. Although they were to become associated mainly with the London Midland Region for much of their lives, only the first 20 went to Crewe to start with, D5000 entering service in July 1958. The Eastern Region got the bulk of the 151-strong class although many were loaned to the Southern Region when first built, with later examples going to the North Eastern and Scottish regions. The locomotives were built

by BR workshops at Derby, Crewe and Darlington. They were used on passenger and freight services, and empty stock from London termini, many finding employment in pairs on heavier freight workings and on summer Saturday extras to the seaside. The class, which became Class 24, saw 20 years of trouble-free service and as its sphere of operation gradually contracted to north-west England and Scotland, it was the Cambrian Coast holiday extras which were among the last regular passenger duties. The last of the class was withdrawn in 1980, although the later development of the original design, the Class 25, saw another seven years service.

'Rats'

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Class 26 - 27



BRCW/Sulzer Type 2 Bo-Bo

At exactly the same time as BR turned out its first Sulzer-engined type 2, the Birmingham Railway Carriage & Wagon Company also produced an alternative design, using the same 1160hp engine, but with Crompton-Parkinson instead of BTH traction equipment. Yet again the Eastern Region was the preferred recipient, being allocated D5300-D5319, but then the bulk of the class went to the Scottish Region. A variation to the design from D5347 onwards saw an uprated 1250hp engine used and GEC traction equipment adopted, and the combined class eventually totalled 116 examples, later designated Class 26 and Class 27 under TOPS. Of the later examples, as well as the Scottish Region, the North Eastern Region had a few and then a substantial batch from D5379 to D5415 was allocated to Cricklewood to continue the modernisation of the Midland lines.

The ER and NER engines soon moved on to Scotland, but the LMR ones remained at Cricklewood until the late 1960s, before joining the rest of the class north of the border. Seen all over Scotland, the classes were always associated particularly with the Highlands, where they eliminated steam traction very quickly, then saw off the competition in the form of the North British Type 2s, to remain in virtually sole charge until the Class 37 takeover in the early 1980s.

By then, 24 Class 27s were push-pull fitted for Glasgow – Edinburgh shuttles, while the remaining few Class 26s confined themselves largely to local and trip freight working in Central Scotland. The Class 27s were withdrawn by 1987 but the last few Class 26s remained in service until 1993, comfortably outliving the BR Class 24s and even the later Class 25s.



'MacRats'



Main Working the farewell railtour for the class, Infrastructure-liveried Class 26s Nos 26003 and 26005 pass Hexham on 13 March 1993. The tour was Victoria Travel's 'Cumbrian Tynesider', which the Class 26s worked from Carlisle to Gateshead, Healey Mills and Preston and back to Carlisle

Below left Towards the end of the BRCW type 2's domination of Scottish highland routes, a Class 26 arrives at Garve with a Kyle of Lochalsh – Inverness train on 9 October 1982

Above Push-pull fitted Class 27s near Winchburgh Junction on the Glasgow – Edinburgh route on 28 May 1977.

Below The last of the class carrying BR green livery, No 27001 crosses the River Forth at Stirling with a Glasgow – Dundee train on 11 May 1974. In the background is the Wallace Memorial commemorating the victory of the Scots over the English in battle in 1297.



Class 42, 43



Top Diesel hydraulics at Swindon. Warships No 818 *Glory* and No 821 *Greyhound* with Hymek D7029 on 19 May 1979. Although D821 and D7029 are in preservation, D818 was retained only as a source of spares for Derby Research Centre's D832, and although there was an attempt at preservation, D818 was eventually scrapped.

Above left The North British Warship Type 4 design was a hybrid that combined the heavy engineering of LMS prototypes Nos 10000/1 with the hydraulic transmission of the later Swindon-built derivatives of the German V200 class, and was based at Plymouth where their limitations found them on a restricted range of services. D604 *Cossack*, the last built to this design, makes its way to Laira depot on 8 June 1965. FRED KERR

Above right The original green livery of the Class 42 Warship fleet was quickly altered with the provision of a small yellow warning panel, as seen on D832 *Onslaught* on 3 August 1965 as it waits to leave Plymouth with a Paddington – Newquay working. FRED KERR

Above D821 in BR blue livery, with Hymek D7018 and Class 31 No 31568 at Old Oak Common on 18 August 1991.

Main In maroon livery, D821 *Greyhound* was a regular performer in preservation on the North Yorkshire Moors Railway, and descends from Goathland past Water Ark on 7 August 1983.



Warship Type 4 diesel-hydraulic B-B

It was said that British Railways consisted of five regions plus the Great Western, and the regions clearly had rather more autonomy than might have been expected. Although legend has it that the Western Region went its own way in the ordering of diesel classes and, contrary to every other region, opted for hydraulic transmission, this is not strictly true. The BR Board wanted to test a limited number of diesel hydraulics similar to those in widespread use in Germany, and made the decision to try them on the WR.

Initially, the GWR had actually chosen gas-turbine propulsion, so diesel-hydraulic was perhaps quite conventional by comparison, but the WR relished the opportunity to remain different to the rest of BR and the first diesel-hydraulics, the five 2000hp North British Locomotive Company A1A-A1As built in 1958, were quite successful, leading to the WR quickly expanding its fleet of hydraulics.

With two 1000hp NBL/MAN engines, and hydraulic transmission from Voith, they were heavy engines at 118 tons, needing six-wheeled bogies. Their days on top-link turns were brief though, as the much more numerous Type 4 Bo-Bos arrived from August 1958.

BR built the Bo-Bos at Swindon and, like D600-D604, they carried warship names. D800-D803 had two Maybach

1000hp engines, with later examples having the engines uprated to 1100hp, but at just 79 tons, a Bo-Bo wheel arrangement was satisfactory and the design appeared to compare very favourably with the best diesel-electric type 4s available, the 136-ton English Electric monsters.

The BR-built Warships were supplemented by 33 from North British, using two 1100hp NBL/MAN engines, again with Voith transmission. The three Warship classes were found to perform very satisfactorily, being used mainly on west of England expresses, plus Waterloo – Exeter trains.

The Warships were ousted from the top jobs by the later Westerns, but they carried on mainly in express service. Eventually though, the diesel-hydraulics were found not to be lasting as well as the German designs they were based on, or their diesel-electric contemporaries. Availability figures plummeted and a decision was made to standardise on diesel-electric transmission system-wide.

With hindsight, this may seem obvious, but for a few years, it had appeared possible that the WR could have been right. All the hydraulics were gradually demoted to more menial duties, and they remained very firmly on the WR. The five Class 41s were withdrawn in 1967 and the later versions, the Class 42s and 43s, had all gone by the end of 1972.

Class 44 / 45 / 46



BR/Sulzer Type 4 1Co-Co1

Diesel engines got bigger and bigger, and while English Electric could now produce 2000hp in a single unit, Sulzer was up to 2300hp, again big enough that the locomotive needed eight-wheeled bogies, but the total weight was only two tons more. This was British Railways' only home-built Type 4 diesel, and the first one, perhaps appropriately, carried the number D1. It had extensive testing on the LMR during 1959, before the next nine of the original order were put into traffic, all ten being based at Camden for WCML express service out of Euston. This phase of their career was extremely brief as the design was quickly superseded by a 2500hp version, still

with Crompton traction equipment, of which 126 were built. A further refinement to the design saw Brush traction equipment installed and a further 56 engines were built to this specification, the last 20 ordered never being completed.

The first ten were named after English and Welsh mountains and the class name of Peak stuck for all of the 194 engines, which eventually became classes 44, 45 and 46.

They all worked for almost their entire careers on the Midland and North-East / South-West main lines on passenger and freight traffic, being seen in Cornwall and on the Glasgow & South Western route into Scotland.

Peak



Main A northbound Midland Main Line express behind No 45150 passes Loughborough Midland on 3 September 1977.

Top One of several locomotives to get the 'celebrity' treatment and a return to something like its original livery, was Class 44 Peak D4 *Great Gable*, seen approaching Oakham with a Toton to Whitemoor freight on 23 September 1980.

Above A NE/SW express headed by No 45090 is seen at Goosehill Junction, Normanton on 11 August 1975.

Right One of many preserved Peaks, D100 *Sherwood Forester* looks particularly smart in original green livery accelerating out of Bewdley during a Severn Valley Railway diesel gala weekend on 14 October 1989.



Class 44 / 45 / 46



Above The Peaks saw use on expresses to the south-west until 1988. No 45158 heads north out of Dawlish on 7 September 1985.

Right On a typical Midland Main Line working which the class dominated for many years, No 45137 *The Bedfordshire & Hertfordshire Regiment (TA)* arrives at Wellingborough, still with manual signalling on 23 June 1976.

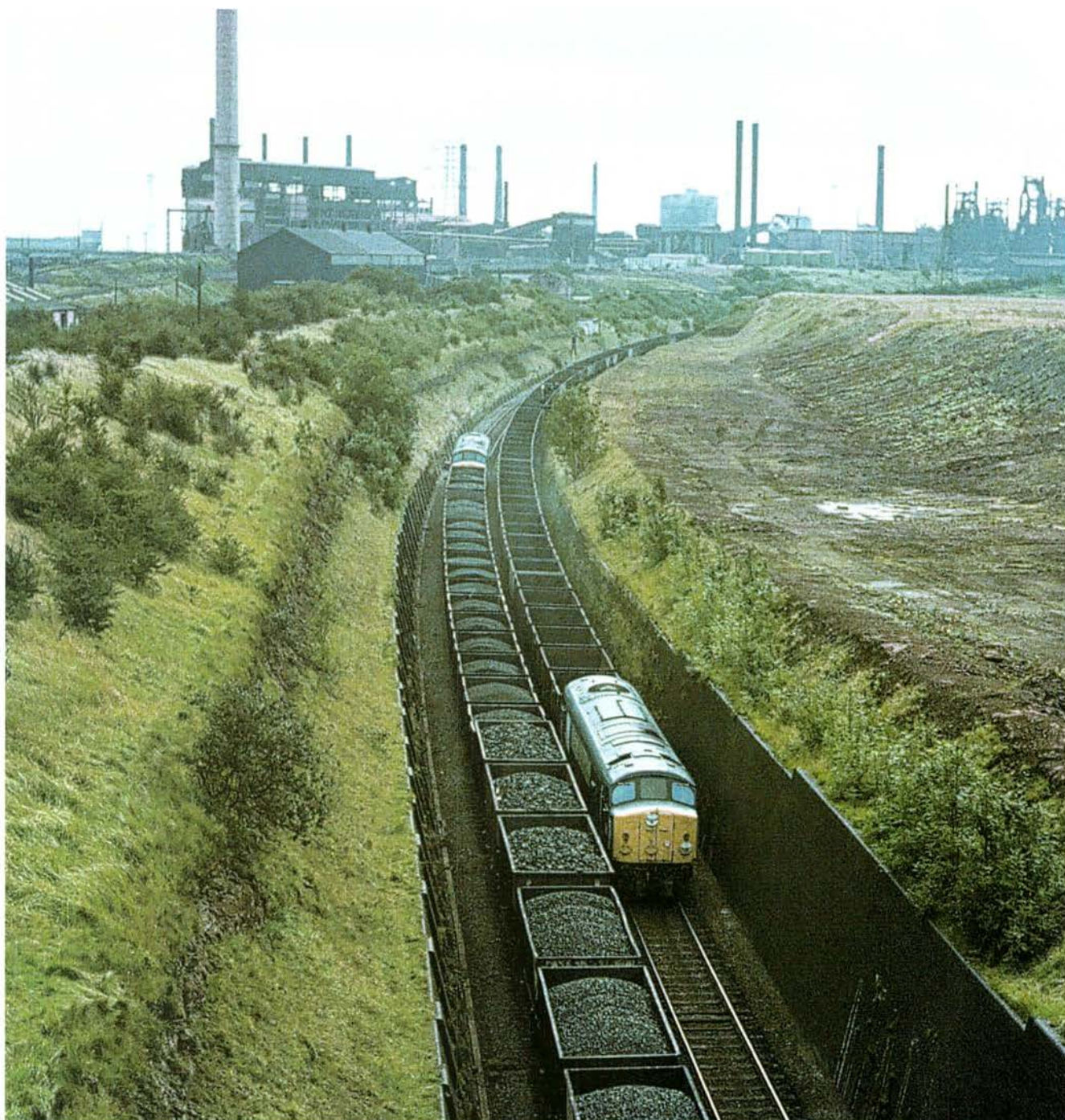


The last 28 built were allocated to Gateshead, mainly for NE/SW trains, but also Trans-Pennine duties and East Coast Main Line services to King's Cross or Edinburgh. In later years their operations changed, particularly as they were replaced by High-Speed Trains on both Midland and NE/SW trains and many finished their days working freight traffic based at Tinsley. After just a few months on WCML expresses, the ten Class 44s were confined to relatively short-distance freight services based at Toton for virtually their entire

lives, being extinct by the end of 1980. The Class 46s were considered non-standard and withdrawn by 1984, but the Class 45s fared better and some lasted until 1988.

A Class 46, No 46035 *Ixion*, made history as the only privately-preserved main line diesel to be certified for operation over BR main lines before privatisation. More recently, No 45112 *Royal Army Ordnance Corps* has also seen regular main line service, operated by FM Rail.

Peak



Above The Class 44 Peaks rarely left the East Midlands. At a location transformed beyond recognition since closure of the steelworks in 1980, Nos 44001 *Scafell Pike* and 44003 *Skiddaw* pass with empty and loaded trains at Corby on 13 September 1974.



Left With a train of four-wheeled limestone hoppers in tow, No 45136 takes the Guide Bridge line at Ashton Moss North Junction and heads for Peak Forest on 7 October 1975.



Above Class 45 No 45004 *Royal Irish Fusilier* waits to depart from St Pancras on 10 August 1974.

Below Class 25s worked Birmingham to Norwich stopping passenger trains through Leicester. The station has lost its roof by 27 May 1977.

Top right Occasional shortages of more modern stock have led to locomotive-hauled trains returning to the Midland Main Line. Class 47 No 47618 *Fair Rosamund* passes Finedon Road, Wellingborough, with a Derby to St Pancras train on 1 July 1987.

Below right Class 45 No 45060 *Sherwood Forester* heads south past Wath Road Junction on 22 February 1975.





Midland Main Line

The Midland line out of St Pancras was always the poor relation of its neighbours either side, the East Coast and West Coast main lines. In steam days, it never had the biggest engines but, as dieselisation took hold in the late 1950s, the Midland was not the first main line out of the capital to get new traction, but it was one of the first to see its express services totally dieselised, and with probably the best locomotives on the market at the time. While Eastern Region routes and the WCML were allocated the 2000hp EE Type 4s, but not enough to take over the entire service, the Midland received the 2500hp BR Sulzer Type 4s, which were more than the equal of the steam engines they replaced, and they were ordered in large quantities.

The St Pancras suburban lines were allocated a large fleet of four-car diesel multiple-unit sets with Rolls Royce engines and hydraulic transmission, which took over from early 1960, while considerable numbers of BR /Sulzer Type 2s and BRCW Type 2s were to handle local goods and passenger services.

Most diesels were allocated to new purpose-built depots at Cricklewood and Toton, although Leicester shed remained important. Leeds Holbeck-allocated Peaks also worked a few St Pancras – Leeds expresses, but as a rule MML expresses ran only to Sheffield, and the new diesel depot in Sheffield at Tinsley was an ER shed which never had responsibility for the MML.

As well as the DMUs for suburban services to Bedford, said to be the most intensively-used in the world, the route also had a DMU from the opposite end of the spectrum, the Midland Pullman, normally working from St Pancras to Manchester Central.

In steam days, the Midland Main Line comprised of three routes from St Pancras; to Derby and Manchester, to Nottingham via Corby, and to Sheffield, Leeds and Carlisle via Nottingham, Derby or the Erewash Valley in between.

Major changes took place in 1966 when Nottingham trains were diverted from the Harringworth route to the Leicester main line; the Melton Mowbray to Nottingham section lost its passenger services and all St Pancras expresses were curtailed to run to no further than Sheffield. The Manchester line was closed as a through route beyond Derby in June 1968, after completion of the WCML electrification. This left St Pancras to Sheffield via Leicester and Derby, plus some Nottingham services via Leicester, as the only remaining expresses. Significant parts of the original main lines have now been lifted, including Matlock to Millers Dale, and later the section north of Wath Road Junction through Cudworth. Even the Settle & Carlisle itself was threatened in the 1980s. High-Speed Trains arrived in the late 1970s and quickly ousted the Peaks from most passenger services, while the suburban services to Bedford were electrified in the early 1980s, though not without some trade union difficulties.



Class 33



BRCW Type 3 Bo-Bo

'Crompton'

With a 1550hp Sulzer engine and Crompton traction equipment, these were a more powerful version of the BRCW Type 2s and classified Type 3. This was probably one of the most successful diesel designs of the modernisation process, but was exclusively SR-allocated and for many years did not stray far from the Southern.

In fact they were exclusively allocated to Hither Green shed for most of their BR careers, but although they started on the SE section on passenger and freight duties from the start of 1960, some moved to the SW section from 1963 and the class found use on all sections of the SR. They had exclusively SR features such as two-character EMU-style headcode panels, and was the first class to be fitted with electric train heating equipment.

Their duties changed as electrification was extended to further parts of the SR system, but 19 were fitted with push-pull control equipment and other features to enable them to

run with new stock on the then non-electrified Bournemouth – Weymouth line, as well as other south-western main line duties after electrification to Bournemouth.

They gradually extended their range though, not only working Brighton to Cardiff trains, but continuing through to West Wales, to Devon and along the Welsh Marches to Crewe. An early inter-regional duty was the Cliffe Quay to Uddington Glasgow cement train, which they double headed as far as York.

The class survived into the privatised era, having been among the last to work regular locomotive-hauled passenger trains, and some remained on freight duties into EWS days until the Class 66s took over. As well as several examples having been preserved, they have proved to be favourites with new Train Operating Companies, and have proved ideal in the Scottish Highlands where they combine Type 3 power with Bo-Bo flexibility.



Above Class 33s can be seen far away from their normal haunts now. Fragonset's Nos 33103 and 33202 head for Buxton past Peak Forest with a railtour on 1 May 2004. NEVELLE WELLINGS

Main No 33027 *Earl Mountbatten of Burma* in BR blue, but with embellishments, passes Claverdon with a Portsmouth – Cardiff train on 24 April 1988.

Below Restored to original green livery, 'celebrity' No 33008 *Eastleigh* brings the empty stock of a VSOE excursion into Poole on 1 August 1987.





Main The first successful diesel railcars operated on the GWR and ran until the mid-1960s. Preserved example No 4 saw use on the Severn Valley Railway in the early 1970s.

Opposite left Typical of two-car units, restored to BR's original green livery, a Derby lightweight Class 108 set forms part of a four-car train at Settle Junction on 16 May 1987.

Opposite right The next generation of DMUs included the Class 158/170 two and three-car sets now widely used across Britain. Arrive Trains Northern unit No158 804 arrives at Scarborough.

Opposite top left One of the more upmarket DMU designs was the BR Swindon Class 124 for Trans-Pennine services from Liverpool to Hull. A set arrives at Liverpool Lime Street on 11 January 1975. All were withdrawn by 1984 and all scrapped.

Opposite top right SR Diesel-Electric Multiple Units were different to other regions' in not having underfloor engines. Although preserved, Hastings unit No 1001 has worked timetabled services, such as a train departing from Yarmouth for Norwich on 22 August 1998.

Diesel Multiple Units

The first serious application of modern (ie non-steam) traction to main line railway use was the use of electricity to power a train. In its simplest form, this required an overhead or third rail power supply, plus traction motors fitted to the axles of a coach bogie, and the electric multiple unit was born.

From this developed the steam railcar, and even a few petrol and diesel railcars, such as on the Great Central and North Eastern railways. When diesel engines were first used in a railway situation, it was either for shunting locomotives or diesel railcars, which both predated main line diesel locomotives by some years in Britain.

Many steam and diesel railcars were able to haul an additional coach or trailer, and so the concept of the diesel multiple unit was born a little later than the EMU.

The GWR pioneered the fairly widespread use of the diesel railcar, designed as either single or two-car units. The LMS and LNER conducted extensive trials but abandoned their railcars during WW2. The SR, of course, went its own way with electrification, almost exclusively with EMUs.

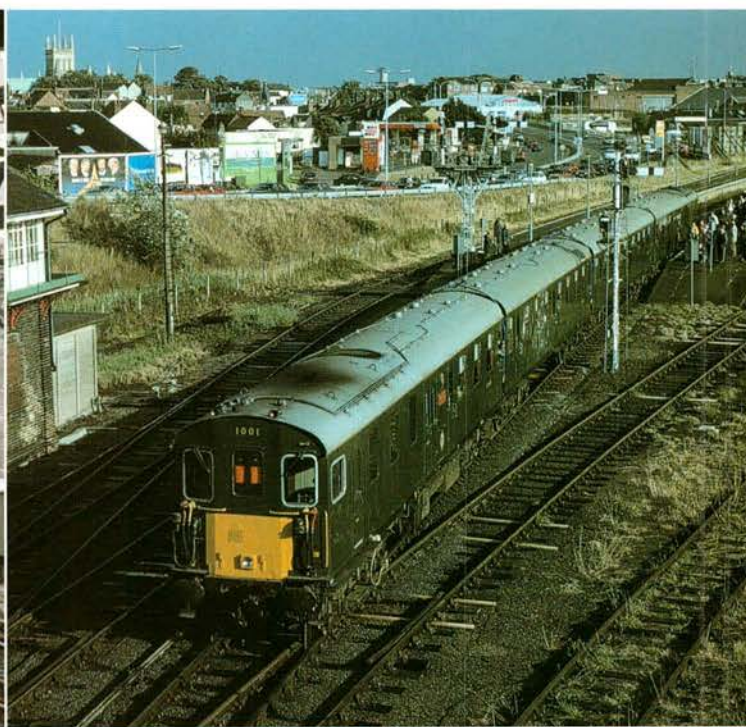
With minimal testing or experience, the BR modernisation plan

envisaged the replacement of more than half of Britain's passenger trains with DMUs, and vast numbers were ordered from any manufacturer that showed the slightest interest. They came in all shapes and sizes and swept across the system within a few years.

There is little doubt that, overall, the introduction of DMUs for secondary, branch line and suburban services was a great success. It did not prevent the widespread decimation of train services which took place at the same time, but it led to a significant increase in traffic in many cases.

The first-generation of BR DMUs has only recently been rendered extinct, and the new generation for cross-country routes is somewhat different, generally not seen in such lengthy formations as virtually all suburban services are now all-electric.

The Pacers, two-car four-wheeled units, are not to everyone's taste, but are about the cheapest passenger trains that can be run. At the top end, DMUs for Inter-City routes are now high-tech, such as Virgin Trains' tilting Super Voyager units, which have now heralded the virtual end of diesel locomotive-hauled passenger trains in Britain, other than the remaining High Speed Trains.



Class 37



English Electric Type 3 Co-Co

Only three Type 3 designs were ever produced, the 'Cromptons' being exclusively SR and the later Hymeks being the exclusively WR hydraulic type.

Introduced at the end of 1960, the English Electric Type 3 was adopted as standard by the ER and NER regions, and later by the WR, but primarily for freight duties. Where they worked passenger trains such as from Liverpool Street to King's Lynn, or the few Cleethorpes to King's Cross trains, they tended to be overshadowed by their larger contemporaries.

Consequently, the 309 engines led a comparatively low-key existence, rarely noticed by anyone and had little enthusiast following. Plain green livery was replaced by plain blue, with little effect on their appearance, but then circumstances changed.

The class was identified as having a long-term future and a substantial proportion was extensively refurbished. As the increasingly run-down Peaks and Class 40s disappeared from the system, the Class 37s now started to look quite distinctive by comparison with other types. They also had the loudest growl of the engines still running in the 1980s and, with sectorisation leading to a profusion of liveries, particularly on locomotives with a long life expectancy, the Class 37s rose from obscurity to being virtually every

enthusiast's favourite.

They appeared to be favourites with railway management and train crews as well, many being maintained in immaculate condition with individual depot embellishments.

While unrefurbished examples continued as Class 37/0 in increasingly shabby blue livery, a sub-class, 37/6, was created for some high-profile, heavy freight flows, often working in multiple, such as steel traffic from Teesside and stone from Peak Forest. Thirty-one Class 37/4s fitted with electric train heating took over passenger workings on the Welsh Marches, Cardiff – Portsmouth and, perhaps most importantly, the West Highland, Kyle of Lochalsh and Far North routes in Scotland.

Eventually replaced by Sprinter units on passenger workings, and by EWS Class 66s on freight, a decreasing number survived in EWS service and a few entered a new phase of their careers with smaller TOCs such as Direct Rail Services and the West Coast Railway Company, leading to an even greater variety of liveries.

The last of the few in timetabled passenger operation went out in style with intensive passenger duties in South Wales, a summer of Knaresborough – Carlisle trains and the Fort William sleeper north of Edinburgh.

'Tractors'



Above The first of 309 Class 37s, No D6700, spent the last years of its working life in original BR green livery. It passes Hinckley with a railtour to Coalville on 5 June 1988. D6700 is now owned by the National Railway Museum.

Below A class that eventually penetrated the extremes of the BR system, No 37415, stands at Thurso on 4 September 1987.

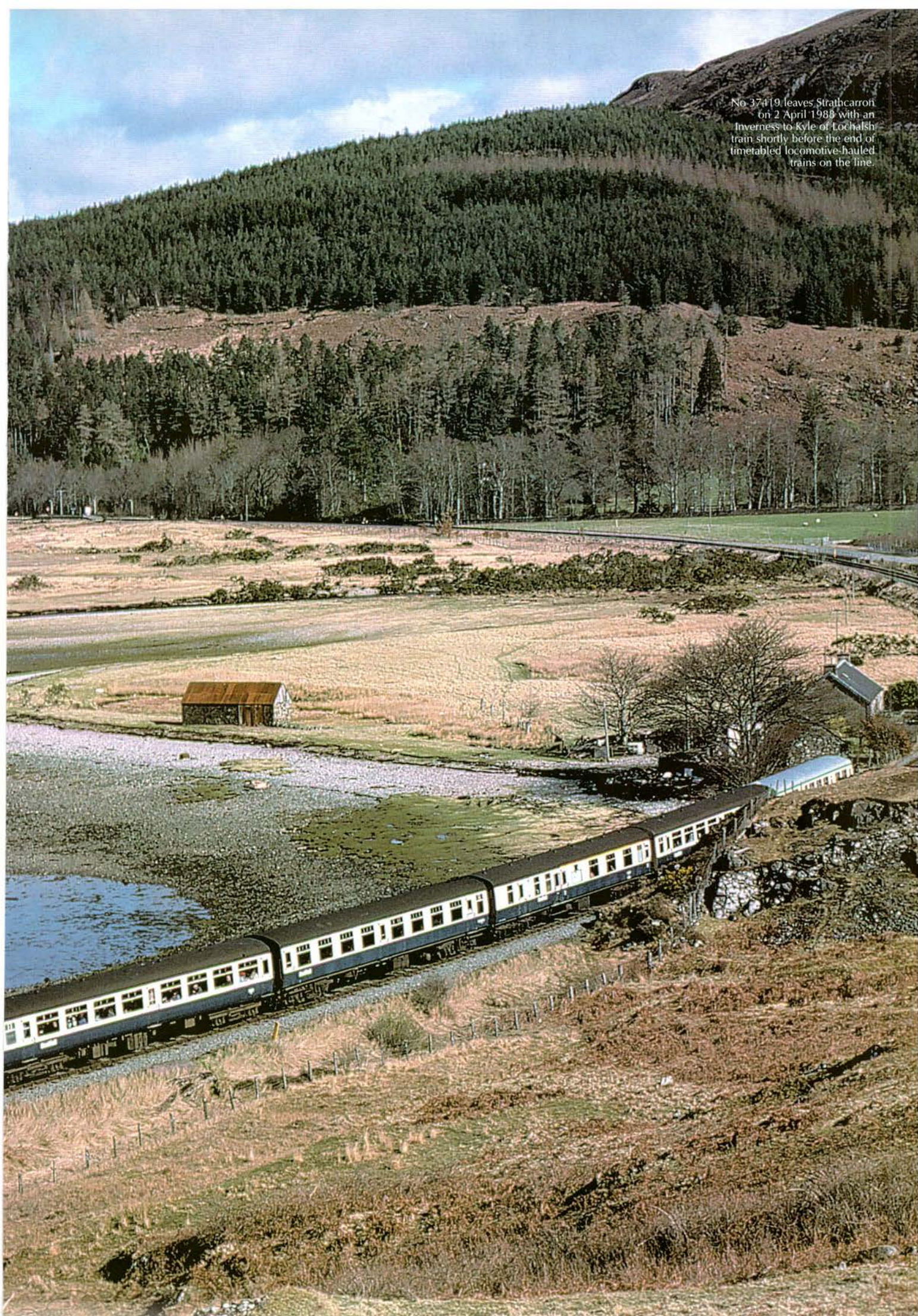
Top South Wales was once home to many of the class. Ruston-engined No 37906 and No 37716 are seen at Ebbw Junction, Newport, with a Margam – Llanwern iron ore train on 21 August 1989.

Above left A later Class 37 passenger duty was the Blackpool club trains. In Inter-City livery but with Regional Railways stock, No 37415 departs from Bolton for Manchester on 7 September 1991.





No. 37419 leaves Strathcarroli
on 2 April 1988 with an
Inverness to Kyle of Lochalsh
train shortly before the end of
timetabled locomotive-hauled
trains on the line.



Class 55



English Electric Type 5 Co-Co

The prototype Deltic was actually one of the earliest main line diesel locomotive concepts in Britain, and it was so radically different to anything else being planned or built that its manufacturers, English Electric, saw it as having great export potential, while having little likelihood of being purchased domestically.

It used two 1650hp Napier Deltic engines, a very high-speed, high-powered but light and compact design developed for marine applications in the late 1940s. It was virtually the only railway application of the products of Napier. Following extensive testing on the LMR from 1955 and later the ER, it was the ER which saw the design's potential. The budgets were limited, so while the WCML would be electrified and therefore had no cash for expensive state-of-

the-art diesels, the ECML would have to wait, but in the meantime needed diesels of the calibre of its steam engines.

The Deltic looked like the answer and 22 were ordered, expected to handle the work of the 34 streamlined A4 Pacifics; the first, D9000, entering service in February 1961. D9000 was to be named *Royal Scots Grey*, the other Haymarket and Gateshead-allocated engines receiving regimental names, while the Finsbury Park engines continued the LNER tradition of carrying the names of racehorses. The Deltics were very expensive, to buy and to operate, but they did the job and transformed the operation of the ECML. It was probably one of the greatest risks taken by any region of BR, but the prototype had been tested very thoroughly and the risk paid off, with the production

Deltic





locomotives giving 20 years of excellent service.

No other region was prepared to pay for such locomotives but, in many cases, the crack diesel-hauled services in Britain had to be worked by more traditional medium-powered machines working in pairs, surely an even more expensive option, which applies to the ECML today with HSTs still in service on the remaining diesel workings.

The Deltics, of course, stayed on the ECML almost exclusively, although they had a brief fling on Trans-Pennine expresses towards the end, final withdrawal coming at the end of 1981, after which the ECML was a much quieter place. They had outlived other designs which dated back to the early 1950s by many years, undoubtedly repaying BR's investment.

Above Still entrusted with top-link ECML duties, No 55012 *Crepello* speeds through Peterborough with the inaugural northbound run of the 'Silver Jubilee' from King's Cross to Edinburgh on 18 June 1977.

Above left Preserved and eventually returned to the main line, D9000 *Royal Scots Grey* presents a very different sight on a VSOE excursion to York races, passes Huntingdon on 19 August 1998.

Left No 55022 *Royal Scots Grey* had the honour of hauling BR's very last Deltic-hauled train, seen arriving at Kings Cross from Edinburgh on 2 January 1982.

Below The introduction of HSTs saw Class 55s demoted in 1978, even to holiday trains to the seaside. No 55015 *Tulyar* is hauling a BR excursion to Skegness, away from Lincoln on 13 August 1978.



Class 25



Main D7672 Tamworth Castle became the 'celebrity' Class 25 long after the rest of the class had disappeared; returned to two-tone green livery and used by Holbeck shed at Leeds for special duties. D7672 and No 47407 approach Leeds at Wortley Junction with a special from Carlisle on 23 June 1990.

Left The WCML 'drags' where diesels are used to haul electric locomotives and trains on non-electrified routes during engineering work, have been familiar for many years. An early example sees BR/Sulzer Type 2s Nos 7606 and 7607 hauling Class 86 No 86024 near Bloxwich, north of Walsall on 3 March 1974.

Above right A typical Class 25 passenger duty on the Welsh Marches route between Crewe and Cardiff. A member of the class built to the same external style as the later Class 24s at Sutton Bridge Junction, Shrewsbury on 15 September 1979.

Right Preserved in original condition, D7633 of the later bodywork design, approaches Foley Park Tunnel on the Severn Valley Railway on 14 October 1990.



'Rats'



BR/Sulzer Type 2 Bo-Bo

Of several classes of Type 2 diesel, the BR/Sulzer product became BR's choice for further new construction in the early 1960s. The North British design was certainly out of the question and the Brush/Mirlees one was considered heavy. BR was now in a position to build its own, so chose its own Sulzer-engined Type 2 above its BRCW contemporary. By the time construction of the last of the first batch of BR/Sulzer Type 2s (later the Class 24s) had been completed, the external styling had already changed considerably, and when D5151, the first of the new order, was turned out from Darlington Works in April 1961, the external styling was identical. An uprated 1250hp engine was used and, after the first 25, AEI, not BTH traction equipment, making the later locomotives faster and rather more different than they looked. Three hundred and twenty three of the new design were

eventually built, with another change to the external appearance being made from D5233. At D5299, the number series had to move on to D7500, finally finishing at D7677, a few later ones built by Beyer Peacock in Manchester. Always associated primarily with the LMR, both Midland and north-western divisions, like the earlier design, the class also saw service in the north-east and in Scotland. Frequently used in pairs, particularly on holiday extras, the class gradually broadened its horizons with later examples allocated to the ER, and several eventually finding their way to the south-west for china clay workings, after the hydraulics disappeared. Ultimately though, the earlier and heavier Brush design of Type 2, having been re-engined, found favour for retention over the BR/Sulzer engines, and the Class 25s faded away by 1987.



Class 35



Above The Hymek Class 35 was the most highly regarded of the diesel-hydraulic designs, but was caught in the mass withdrawal of all classes with this form of transmission during the early 1970s. With its working life about to begin, D7038 poses in Beyer Peacock's Gorton Works yard in June 1962 prior to undergoing its acceptance trial with BR. FRED KERR

Right The end of the Hymeys, Nos 7054 and 7055 await their fate at Bristol Barton Hill on 9 September 1973.

Below Preserved D7076 is well away from familiar territory, at Ramsbottom on the East Lancashire Railway on 17 June 1989.



Diesel-hydraulic Type 3 B-B

The original BR diesel orders were for type 1 (800-1000hp), type 2 (1000-1365hp) and type 4 (2000-2750hp) locomotives only, and type 3s came later, with a BRCW design for the Southern Region and an English Electric design for everywhere else. The Western Region, though, wanted a diesel-hydraulic type 3, and ordered 101 1740hp Maybach-engined B-Bs, with Mekydro hydraulic transmission. They were built by long-established steam locomotive builder, Beyer Peacock, at Gorton in

Manchester, the company's only large-scale diesel production for the home market.

It was a successful design which gave excellent service in all parts of the WR from May 1961 on all types of duties, but as hydraulic transmission went out of favour, the diesel-electric English Electric Type 3s came to considerably outnumber the Hymeys on the WR, and the last of the hydraulics was withdrawn from service in 1975 after a relatively short life.

Hymek

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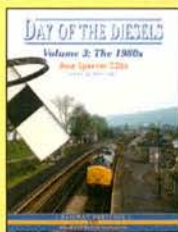
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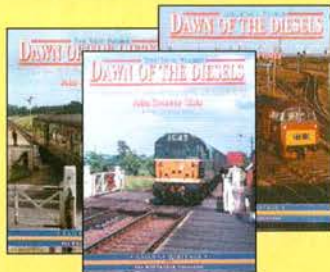
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'ISAMBARD KINGDOM BRUNEL'

Class 52



Above Bristol was always a locomotive changeover point for inter-regional trains to the West Country, and on 7 August 1965, maroon-liveried D1029 *Western Legionnaire* eases off Bath Road depot to position itself for a West Country-bound service. FRED KERR



Left The final tour stands at Paddington after arrival on 26 February 1977. It would be 25 years before a Western was to be seen again at Paddington.

Main The 'Western Tribute' railtour headed by D1013 *Western Ranger* and D1023 *Western Fusilier* climbs away from The Severn Tunnel and passes Pilning on 26 February 1977.

Below Preserved and eventually returned to main line service, D1015 *Western Champion* restored to its experimental golden ochre livery passes Kidderminster on 17 August 2002.





Western diesel-hydraulic C-C

The premier WR diesel-hydraulic class in the 1950s, the Warships, were rated at only 2000 or 2200hp, barely equal to the steam engines they replaced, and they needed to be used in pairs on the heaviest trains, so it was not surprising that something a bit meatier was needed. A bigger diesel-hydraulic emerged from BR's own workshops at Swindon in December 1961 in the shape of D1000 *Western Enterprise*, a Co-Co with two 1350hp Maybach engines and Voith hydraulic transmission.

The external styling was very different and a number of liveries were tried, D1000 being turned out in desert sand; and, although a handful were plain green, and D1015 *Western Champion* was golden ochre, a maroon livery was also tried and quickly found favour, most of the class receiving this livery. Construction of the 74 locomotives was shared between Crewe and Swindon.

These engines developed an almost fanatical following among enthusiasts, and were a great success on WR expresses, particularly on the main line to the south-west. Like most hydraulics, they rarely left the WR, although D1013 made it to Leeds on one occasion.

It was the trend towards standardisation, with electric transmission finding favour over the WR's hydraulic, which led to the relatively short lives of the Westerns.

After being gradually demoted to less demanding duties, the arrival of the HSTs in 1976 spelt the end. An extensive railtour programme in early 1977, featuring the last few survivors, culminated in a Paddington – Swansea – Plymouth tour with D1013 and D1023 on 26 February, by which time a couple of Westerns had already entered the brave new world of preservation.



Go West!

Brunel's main line out of Paddington was always a bit special. Running originally to Bristol, using broad (7ft 0¼in) gauge, Brunel then built the Bristol & Exeter, the South Devon and the Cornwall railways to reach Truro and complete a through route to Penzance in 1859. The cut off from Reading via Westbury to Cogload Junction, Taunton, was completed much later in 1905, and although referred to as the Berks & Hants, this is only really accurate for the eastern section of the line.

First it was broad gauge, then for many years the West of England Main Line was typified by the distinctive copper capped-chimneyed GWR steam engines, and when the diesels came, they remained exclusive to the Western Region. The diesel-hydraulics were quite unlike their contemporaries elsewhere in Britain. Even the liveries were different, but they turned in some good performances and the Westerns, at least, were worthy successors to the Kings and Castles – at least for a while.

In the 1970s, though, availability was not what it should be; the hydraulics seemed to be typified by such poor external condition that it was sometimes difficult to tell just which livery a locomotive carried, and if a Western was not

available, then two Warships were needed.

The West of England main line was known to so many generations of holidaymakers that the hydraulics, with their distinctive appearance, sounds and smells, developed an almost unequalled following among diesel enthusiasts. It was a line which had Sonning Cutting, the Dawlish sea wall, the Devon banks, the Royal Albert Bridge and the most westerly terminus at Penzance.

The hydraulics were increasingly assisted by Class 47s, and then the Class 50s, transferred from the LMR and given Warship names. Although the latter failed to live up to their earlier promise, they held the fort after the demise of the hydraulics in the mid-1970s, until a virtually complete takeover by HSTs.

A line which saw more summer Saturday extras than anywhere else inevitably kept locomotive-hauled trains for the longest, and Class 47s, 50s, 45s, 46s and even pairs of 31s kept the interest going well into the 1990s.

Unfortunately, freight traffic has now all but disappeared and with only the overnight sleeper seeing a daily First Great Western Class 57 working, and there is little to attract the enthusiast to the Devon sea wall.



Above No 50018 *Resolution* and No 47455 depart from the terminus at Penzance on 7 April 1988.

Main Brunel's atmospheric railway, the South Devon, was and remains one of Britain's most spectacular stretches of railway. Never strong on freight traffic, Class 37 No 37674 heads the Burngullow – Irvine china clay slurry tanks past Langston Rock approaching Dawlish Warren on 20 September 1989.

Right Crossing the Royal Albert Bridge over the Tamar and entering Devon from Cornwall on 15 March 1975 is D1027 *Western Lancer*.

Below Network South East locomotives were certainly not confined to London outer suburban duties. Class 50 No 50003 *Temeraire* emerges from Horse Cove Tunnel on 5 August 1989.



Class 17



Clayton Type 1 Bo-Bo

The whole concept of a Type 1 diesel with a horsepower of less than 1000 now seems incredibly anachronistic, yet BR ordered hundreds, of which the English Electric version was clearly the best.

However, the Clayton Equipment Company came up with a radically different design, of only 900hp, but with a centre-

cab layout, and for political reasons BR liked it enough to stop buying any more English Electric Type 1s and order 117 Clayton ones. It seems that the centre cab was seen as lending itself better to possible one-man operation in the future, and this could have been crucial in competing for some of the traffic a Type 1 would be used for, traffic which virtually disappeared over the next 20 years anyway.

The Claytons were a disaster and, just like the NBL Type 2s, the poor old Scottish Region bore the brunt of the problems. Most went new to the ScR, where they worked in the lowlands, and to Carlisle; a few went to the NER and the last batch to the ER at Barrow Hill. Most eventually migrated north of the border, but a few found employment in Cumbria for a few years.

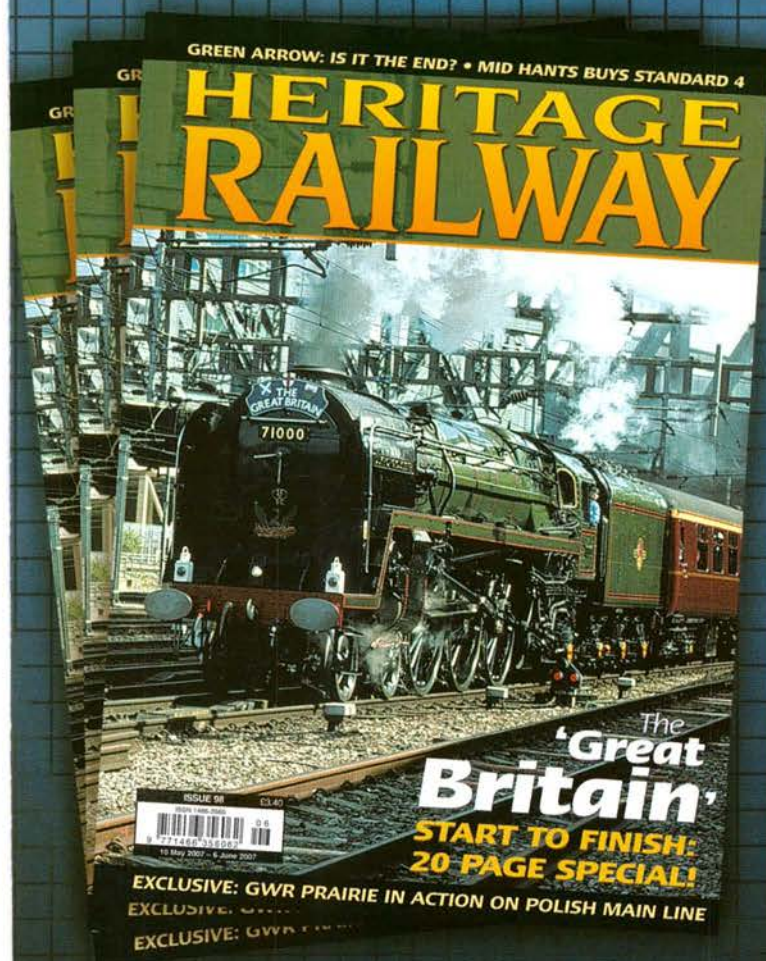
Introduced in September 1962, relatively late in the modernisation process, this was one of the designs with the shortest working life, just 10 years or so, but with 117 built, the Claytons were one of the most expensive failures. Fortunately the problems were discovered before the Type 1 fleet was complete, and BR was able to switch back to the English Electric design for further new construction. Some Claytons soldiered on into the 1970s, but the last one was switched off in December 1971.



Above D8585 passes Portobello East Junction, Edinburgh, with the distinctive Leith General Warehouses train in August 1964. COLOUR-RAIL

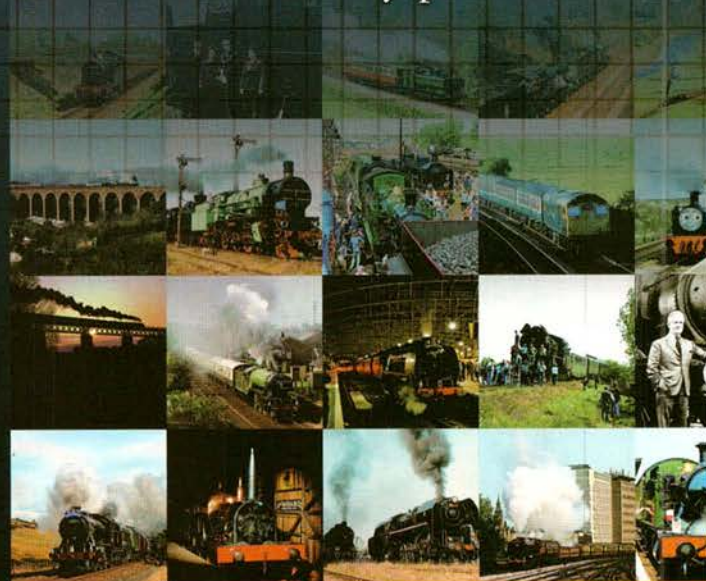
Below Just one Clayton Class 17 has been preserved, after many years industrial service. D8568 was on display at the Old Oak Common depot open day on 15 August 1991. It is now based at Chinnor.

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Class 47



Brush/Sulzer Type 4 Co-Co

D1500 emerged from the Brush works at Loughborough in November 1962. It had taken some time before British diesel manufacturers came up with a design which could consistently and economically compete with the best of express steam power. The Class 40s were heavy and relatively low-powered; the Peaks were adequately powered but still heavy and ungainly; the Westerns were good but hydraulic transmission never lived up to its expectations long-term; and the Deltics were superb but expensive to build and maintain. The diesels which finally made the modernisation programme work were the Brush Type 4s.

Three prototype Type 4 Co-Co designs were thoroughly tested by BR and all were good. The BRCW's D0260 *Lion* was the least reliable one and it was BRCW's financial collapse which led to one of its competitors, Brush's D0280 *Falcon*, initially winning the battle. The production series

differed from *Falcon*, though, in that the Sulzer engine from *Lion* was used instead of *Falcon*'s Maybach engine and the external styling, although similar, was tidied up. In fact, the Brush Type 4 was probably nearer to being a lighter and more modern version of the Peak than a production version of *Falcon*.

The hydraulics saw steam off on the WR; steam continued on the SR until the Bournemouth line could be electrified; the Peaks had taken over most Midland and NE-SW traffic from medium-powered steam engines; electrics were taking over the WCML south of Liverpool and Manchester; and the EE Type 4s were helping their steam predecessors on the WCML north of Crewe and the ECML, where they supplemented the Deltics and Peaks. The Brush Type 4s simply filled all the gaps; they worked on virtually all parts of the system on all types of traffic and, in many cases, took over from the earlier classes which had started the



'Duffs'



modernisation process.

By the time D1111, the last one of the 512-strong class, rolled out of Crewe Works in February 1967, steam traction was virtually finished.

Their duties have changed over the years. First the Class 40s were phased out of East Anglian and ECML expresses and from premier WCML duties, and the Class 47s took over. The WR hydraulics proved less and less reliable and the Class 47s gradually took over many of the top duties, particularly on the Paddington to Bristol, South Wales and West Midlands services. Eventually, even the Deltics disappeared from ECML traffic, and the Class 47s virtually monopolised the remaining non-HST duties. Many, though, led unspectacular lives on ER freight traffic for many years, particularly based at Tinsley depot.

They proved the most long-lived of diesel designs, some still remaining in traffic in 2007. There have been modifications, rebuildings and re-engining, but on a relatively small scale. However, to fill a gap in the traffic requirements for a limited number of locomotives with passenger haulage capability, even if only in emergencies, a number were rebuilt with GM engines and Class 56 alternators. These few left in occasional top-link service are now designated Class 57 and work with Freightliner, First Great Western and Virgin Trains.

Above left To commemorate the 150th anniversary of opening of Brunel's Great Western Railway, No 47484, which always carried the name *Isambard Kingdom Brunel*, was painted into GWR lined Brunswick green livery. The engine is seen at Bristol Temple Meads on 31 May 1985.

Left Most passenger-dedicated Class 47s came under Inter-City. No 47555 *The Commonwealth Spirit* at Chinley East Junction is on the daily Liverpool – Harwich boat train on 1 April 1988.

Above One of the last of the class carrying two-tone BR green livery, one of the many Class 47s dedicated mainly for freight service, No 47364 heads northbound oil tanks past Tapton Junction, Chesterfield, on 5 September 1974.



Middle Few classes have carried as many liveries as the Class 47s. In a maroon livery to commemorate the 150th anniversary of the Midland Counties Railway, No 47973 departs from Holyhead on 27 August 1989.

Bottom Railfreight Class 47/0 No 47280 and Inter-City No 47509 combine at Chester hauling a diverted WCML express on 9 September 1990.



Above Reminiscent of ECML scenes from 30 years earlier, preserved Class 40 No 40145 speeds through Retford with one of a series of tours commemorating the 25th anniversary of the Class Forty Preservation Society on 23 January 2005.



Left Deltic No 55009 *Alycidon* crosses the swing bridge at Selby on the now abandoned section of the ECML on 25 July 1976. From just north of here where the Hull line diverges to Chalons Whin Junction, south of York, the track on the original formation has been lifted.

Above right Class 31s Nos 31203 and 31181 at King's Cross on the evening of 27 December 1974.

Right Class 47 No 47426 heads an up ECML express at Black Carr Junction, south of Doncaster on 2 September 1974.

Far right Class 31 No 31224 climbs Holloway bank at Belle Isle with empty stock on 24 May 1974, closely followed by a Deltic on a down express.



East Coast Main Line

For 40 years, the ECML had the Gresley Pacifics, and these were not going to be ousted by any old class of diesel. A4 No 4468 *Mallard* had proved capable of 126mph in 1938, and 20 years later the ex-LNER Pacifics were still masters of the job. Nevertheless, when the first English Electric Type 4s were built in 1958, although the first five went to Stratford for Norwich expresses, the next five went initially to Hornsey for ECML services. They were tried on the top expresses including the 'Flying Scotsman' and it is fair to say they were not a disaster. Reliability and power were not up to Pacific standards at the time, but diesels by now were demonstrating clear superiority to steam in terms of availability and maintenance.

The prototype Deltic, when tried on the ECML in 1959, though, proved to be everything that was needed and, despite the cost, the ER, NER and ScR made the difficult decision to invest in a small fleet. The 22-strong production batch entered service with little fuss and quickly knocked the streamlined A4s off most of the top jobs. The EE Type 4s continued to play a part but were supplanted by Gateshead-based BR/Sulzer Type 4 1Co-Co1s.

Meanwhile, it was the GNR suburban lines which were to see wholesale dieselisation with medium-sized diesels and DMUs. Most classes of early smaller diesel seemed to find employment to an extent on GNR services, including North British and BRCW Type 2s, EE Type 1s, BR/Sulzer Type 2s and, of course, Brush Type 2s, which soon became the favoured

type on the region. Hornsey was replaced by a purpose-built depot at Finsbury Park and, once the Brush/Sulzer Type 4 Co-Cos arrived in force, steam was eliminated south of Peterborough in May 1963.

The ECML, particularly the GN section, always had a reputation for the quality of its track, and the dramatic acceleration of services was hampered more by the impressive, but by now anachronistic, mechanical signalling installations. Modernisation took place in the early 1970s, including removal of the 20mph Peterborough bottleneck, and for much of the 1970s, Deltics and Class 47s in corporate blue livery represented state-of-the-art diesel traction on BR. The Peaks continued to be seen occasionally, and even the Class 40s never totally disappeared until the class was extinct. Further north, the ECML is used by NE-SW services north of York, now usually routed via Doncaster. A wider variety of power could always be seen on the NER routes, with steam lasting until autumn 1967 on some freight services.

With the hydraulics in trouble and the replacement Class 50s not quite living up to their reputation, the WR took priority for the provision of HST sets in the mid 1970s, but the ECML followed and these quickly transformed services.

Deltics were relegated to a few King's Cross – York services and even summer Saturday trains to Skegness, formerly double-headed Class 31 workings. The Class 47s outlived them all, of course, but from 1978 the HST sets were in virtually total control until electrification.

Class 14



Paxman hydraulic 0-6-0

'Teddy Bears'

Paxman hydraulic 0-6-0, Class 14, 'Teddy Bears' If ever a class of engines should never have been built, then it was the Class 14. Admittedly there was nothing between the 350hp 0-6-0 diesel shunters with their 17mph maximum speed and the various Type 1 Bo-Bos, but the WR decided to plug this gap with what was unkindly described as a diesel-hydraulic version of the 19th century GWR Dean Goods 0-6-0.

Built relatively late in the dieselisation process in 1964, the 56 engines were mainly engaged in branch goods and trip workings, particularly in South Wales. In theory they could have worked passenger trains but never actually did, and although it proved to be an extremely good design, there really was no place for them and they faded from WR use within a few years.

One of the most surprising and often overlooked developments then took place, when the class was transferred in bulk to Hull for similar duties. In 2007, Hull is lucky to see one freight train a day, yet in 1968 there was apparently enough work for an entire class just hauling local trip freights. Again it was shortlived, but the Class 14s then entered the much more successful phase of their careers, when the majority was sold into industry. They ousted steam from three of Britain's best known and most popular industrial

railway systems overnight – the ironstone quarries around Corby, and the colliery railways based on Philadelphia in County Durham and Ashington in Northumberland. The Corby workings only lasted until 1978 when ore mining in Britain ceased, and the colliery systems likewise closed as the coal mining industry was decimated in the 1980s. Preservation beckoned for a fair proportion of the class, but one or two have returned to commercial use recently, notably on Channel Tunnel Rail Link construction duties.

Above During its days hauling ironstone on the extensive Stewarts & Lloyds quarry system at Corby, No 45, heads towards Haringworth with empties on 27 April 1978.

Opposite top Gerald Boden's three preserved Class 14s, No 14029 in fictitious BR blue livery plus D9516 and D9523 on the Great Central Railway at Loughborough on 7 September 1986.

Opposite left D9517 runs round its engineers' train at Parkend on 20 August 1967. This line is now the preserved Dean Forest Railway. ROD BLENOWE, JOHN STRETTON COLLECTION

Opposite right In NCB service, Class 14 D9518 is seen at Ashington Colliery on 2 March 1972.

Opposite bottom Class 14 D9531 pilots the pioneer preserved Class 47 D1842, into Oxenhope on the Keighley & Worth Valley Railway on 5 November 1989.





Corporate blue

You either loved it or you hated it – there were no half measures, but the BR blue era was far more than just a phase in BR's locomotive livery development. 'Corporate identity' was a trendy in-phrase in design circles, and BR's corporate identity needed to be established; it needed to apply not just to rolling stock, but also to station signs, stationery, uniforms and associated road and shipping transport. Even the name changed with services being marketed under the brand name of British Rail.

Blue, dark or light, is still associated with some of the most distinctive designs of the steam age, particularly the Coronation and A4 streamliners and, of course, with the prototype Deltic. It was adopted as standard for express steam engines by BR in 1950, and quickly found to be impracticable. BR tried it on one diesel, Brush Type 2 D5578, but then chose a light blue as standard for WCML electrics. Its first application on BR coaching stock was on the 'XP64' set in 1964, with a Brush Type 4 diesel D1733. When XP64 came out, it was experimental, but the design team knew where it was going. Brunswick green engines and maroon coaches, synonymous with BR steam, were on

their way out. Many enthusiasts regretted the standardisation of liveries that came with nationalisation, but had seen a return to regional liveries after 1957, with red Pacifics on the LMS, malachite green coaches on the SR, and chocolate and cream on the WR. Now standardisation was the in-word, and no exceptions would be tolerated. The blue and grey coaches that appeared in 1965 were very attractive, but then came the locomotives. D9002, the first Deltic to go blue, looked utterly horrendous. Gone was even the red background to the double arrow symbol, as sported by D1733. Plain, slightly darker blue with all yellow ends, this flew against all the design criteria that had gone before. And this era was to last for nearly 20 years.

Eventually, the rules were just too constricting; everyone got bored, and individualism gradually crept in. Stratford depot acquired a reputation for painting the roofs of its engines white. Finsbury Park started to paint the window surrounds of its Deltics white. Class 31s and Scottish Class 37s started to sport white stripes, and eventually in 1980 the 'large-logo' blue livery appeared, although this was on a more





official basis, and was never applied to all classes. Twenty years after its demise, the fact that the corporate blue era lasted so long and was what so many enthusiasts were brought up with and never knew anything else, gives it a peculiar nostalgia of its own. Rail blue is the preferred livery for many preserved diesels, even to the extent that more Deltics can be seen in the blue, which suited them particularly badly, than the two-tone green which was designed to enhance their appearance. One part of the corporate image which did endure was the British Rail 'double arrow'. Usually white on a red background, the red was shortlived on locomotives, D1733 only carrying that part of the livery briefly in BR service. It is also forgotten that bogies and running gear were dark brown in the original design criteria. All yellow ends were perhaps the worst part of the design, but spread like wildfire across the diesel fleet on the back of the new health and safety consciousness. Only now that high-intensity headlights have removed the need for many square feet of yellow paint, have designers been given a little more freedom again in the matter of front-end livery design.

Above left A Class 25 heads north through Burntisland, Fife on 25 March 1978.

Opposite bottom left The XP64 Class 47 No 1733, now No 47853, is still in service with Riviera Trains, and is seen at Baldock on 21 March 2007 working from Hitchin to Peterborough via Ely. IAN BOWSKILL

Opposite bottom right The diesel era on the Great Eastern main line. In a scene now transformed by electrification and the construction of Crown Point depot, Class 47 No 47156 approaches Norwich on 16 September 1974.

Above Deltic No 55015 *Tulyar* illustrates the BR corporate blue era with an excursion at Lincoln on 13 August 1978.

Bottom left Depot embellishments started to break the monotony of BR blue in the mid-1980s. Class 20s led by No 20173 pass Hartlepool with a Newcastle – Scarborough railtour on 26 July 1987.

Bottom right BR blue is the preferred livery for many preservationists, who were brought up with it and knew nothing else. Class 50s No 50031 *Hood* and No 50049 *Defiance* pass Wellingborough with empty stock from a Countryside March special from York on 23 September 2002.





Above Barrow Hill was one of the few roundhouses to be used for stabling diesel locomotives and, as such, it proved to be a very enduring shed, surviving long enough to become a centre for preservation in the 1990s. Nos 1833, 4035, 8303 and 8025 stand round the turntable on 29 May 1972.

Below Gateshead was one of Tyneside's locomotive depots in steam days, but became the premier depot for diesels, although it was simply a conversion of the existing facility. Class 40 No 258, Class 47 No 1991 and Deltic No 9008 *The Green Howards* receive attention on 26 March 1972. The few diesel locomotives on Tyneside in the 21st century are stabled at Tyne Yard.

Main March shed (31B) was built adjacent to the LNER's huge Whitemoor yard, which handled considerable coal traffic to London. A diesel depot was built as part of the modernisation of East Anglian routes in the early 1960s, and the depot remained important into the 1990s but has now been closed and demolished. The Class 31s always associated with the depot are still prominent on 7 February 1988.

Right Westhouses was one of many MR/LMS sheds in the East Midlands coalfield. The only change between its days as a base for 4F 0-6-0s and 8F 2-8-0s, and the Class 20 diesels in occupation on 29 May 1972 is that the roof has been removed. Nothing now remains of this location since the coal industry disappeared.



On Shed

As part of the modernisation process, BR built a number of showpiece marshalling yards and diesel depots. Tinsley, Ripple Lane and Healey Mills were identified as hubs of a new freight network, while other existing yards and locomotive depots such as Toton, Whitmoor and Bescot were updated. Not all diesels found themselves allocated to purpose-built depots, though, and some old steam sheds simply adapted to the new form of traction with very little alteration. Gradually, as the locomotive fleet contracted and traditional traffic flows disappeared, many more depots closed, and even modern ones such as Finsbury Park, Tinsley, Bristol Bath Road

and Eastfield are now no more. Huge yards such as Whitmoor, Tinsley and Severn Tunnel Junction have all but disappeared as well.

Large locomotive depots only exist now at a handful of locations such as Toton, Bescot, Immingham and Knottingley, with even Crewe having closed. Class 66s from all the TOCs are simply stabled at convenient points like Washwood Heath, Peterborough or Peak Forest. With most passenger services formed of fixed-formation trainsets, maintenance is carried out at what are little more than glorified carriage sheds such as Old Oak Common and Bounds Green.



Class 50



English Electric Type 4 Co-Co

The Class 50 was unique in many ways. It was the first diesel class to appear in rail blue livery, though still with D400 series numbers; the last BR diesel class to be built in the steam era, and which effectively eliminated steam; and the only class to be leased to BR by a subsidiary company of its builders.

English Electric's 2700hp DP2 Co-Co had proved to be one of the best of all the prototype designs, and the Class 50 was simply a production version incorporating many design advances, which should have made the Class 50 something superior to the Class 47; in particular it was the first type since the Deltic with 100mph capability. It did not look like DP2 as the BR design panel was now involved and dictated external appearances, cab layout and windows etc.

Only 50 were built and they were specifically designated for WCML expresses on the non-electrified lines north of Crewe. Despite their speed and power, they were usually employed in pairs on the top WCML workings. Their introduction led to smaller and older classes in the north-west being cascaded on to the few remaining steam workings, and 50 new express diesels effectively wiped out the last couple of hundred steam engines from their coal, general goods, shunting and occasional stopping passenger trains by August 1968.

The Class 50s were a success from the start on the LMR, but it had always been hoped that their reign would be short as electrification on to Glasgow was by then a priority. After inauguration of the Electric Scots in 1974, all but 12 went to the WR to finally replace the last Western hydraulics on West of England trains. The LMR's remaining 12 eventually followed and the 50s were into the second and much less successful phase of their careers.

In large-logo blue livery with warship names and later with some in Network SouthEast livery for Waterloo – Exeter trains, they generated much more of an enthusiast following in the 1980s, but their reliability record was nowhere near that of the Class 47s. Fortunately, the top WR jobs were by then handled by HSTs anyway.

In an effort to get more use out of them, one was rebuilt with Class 37 bogies and traction motors to make it a freight engine, but it was not a great success, and one of BR's fastest diesels just potted about with china clay trains on Cornish branches.

The first Class 50 was withdrawn in 1987 and the last in 1992 after some adventurous farewell railtours. An enormous proportion has been saved, many in working order and several have returned to regular main line use in recent years.

'Hoovers'



Above No 50023 *Invincible* on a Gloucester – Paddington train passes the remains of Swindon shed, containing preserved GWR Castle No 7029 *Clun Castle*, on 26 August 1985.

Main No 50024 *Vanguard* heads into Cornwall past Saltash on 6 September 1985.

Top D400 *Fearless* and No 50007 *Sir Edward Elgar* are seen from the M1 motorway as they head one of the farewell railtours for the class past Pinxton on the Robin Hood line on 13 June 1992



Above Brush Type 4 D1849 tops Grayrigg summit with the down 'Royal Scot' on 23 April 1966. BRYAN HICKS

Below The Class 50 fleet, by the beginning of 1970, was in full command of WCML premier services as seen at Carlisle on 7 July 1970, when D407 was noted waiting its next duty, D404 and D435 awaited departure with an up express and an unidentified class member sat in the bay platform with a local Carlisle – Crewe service. FRED KERR

Top Even Deltics have been known to use the WCML. No 55013 *The Black Watch* climbs Beattock at Greskine with a diverted King's Cross – Edinburgh express on 4 May 1980.

Main English Electric Type 4 D351 on a down Liverpool express overtakes classmate D231 on a parcels train at Rugby on 9 September 1963. BRYAN HICKS



West Coast Main Line

Electrification of Britain's railways started before dieselisation and had already taken hold by the time of nationalisation in 1948, but it was mainly for short-haul heavy freight such as the LNER's Manchester – Sheffield – Wath 1500v DC, or 750v third-rail suburban passenger as on the SR.

Major electrification of a premier inter-city route was something new, but the LMR saw it as the future for the WCML, initially from Euston to Birmingham, Crewe, Liverpool and Manchester. As the first line on which main line diesel power had been used successfully, there was no question of halting the process of dieselisation until electrification was complete, although it was clearly a lower priority than for other main lines and never received enough engines to eliminate steam as quickly as the other regions.

With such a massive rebuilding in process, with diversions and speed restrictions for many years, the newer and more powerful diesels were not needed and the English Electric Type 4s were adequate to haul the principal expresses, with steam retained on many secondary duties right through the electrification process which ran from 1960 to 1966.

BR/Sulzer Type 4 Peaks were seen briefly and, inevitably,

once Brush Type 4 diesels had been produced in large quantities, they started to operate the major expresses out of Euston in the mid-1960s.

For secondary duties, including empty stock trains from Euston, BR/Sulzer Type 2s and a few EE Type 1s were preferred for many years, with few other diesel classes ever having many regular turns on the southern half of the WCML until well into the 1970s.

North of Crewe, the motive power situation was similar, although steam lasted a little longer, still operating over Shap until the end of 1967, and with the very last steam workings taking place in Lancashire in August 1968. There were a few Metro-Vick Co-Bos and Clayton Type 1s in the north-west but their reign was short-lived.

By 1968, the English Electric Class 50s were taking over the prestige workings north of Crewe, often double headed, until electrification through to Glasgow in 1974.

Since then, though, many BR diesel types have found themselves operating well away from their home territory, including more and more on electrified lines such as the WCML. Apart from the WR hydraulics and some exclusively Scottish types, virtually all classes have been seen on various parts of the WCML in more recent years.





West Coast Electric

In common with most European countries, Britain decided that electrification was the long term aim for most main line and suburban services. While already behind other countries in modernising, Britain, unlike Germany in particular, was determined to dieselise first, rather than going straight from steam to electric.

The West Coast Main Line, linking London with Birmingham, Liverpool and Manchester, is the busiest in the country, and was the obvious candidate for early electrification. Planning commenced in the 1950s, and no expense was spared when construction commenced; 25kV overhead was chosen, and not only did nearly every bridge and tunnel have to be rebuilt to accommodate the catenary, but also several stations, particularly those at Euston and Birmingham New Street were flattened and replaced by 1960s concrete architecture.

While electrification progressed, starting from Liverpool and Manchester, English Electric, then Brush Type 4 diesels, took over the premier services, although often diverted to Kensington Olympia or St Pancras. Meanwhile, electric locomotives and multiple units were ordered. The locomotives were to be in five variations to a standard Bo-Bo design, designated AL1 to AL5, eventually becoming Classes 81 to 85. Once electric services were inaugurated south of Rugby and into Euston in 1966, a more modern

Bo-Bo was available, the AL6, which became Class 86.

It has to be said that the WCML electrification was an instant success and, inevitably, it needed to be extended to Glasgow. It was 10 years before it happened, though, with no further main line electrification taking place, although in the meantime many suburban lines were electrified.

For the inauguration of the Electric Scots in 1974, Class 87s were built, and eventually Class 90 Bo-Bos which replaced the Class 81-85s. Class 92 Co-Cos were introduced primarily for heavy freight traffic running through to the Channel Tunnel.

Forty years on, though, the once state-of-the-art electrical track and signalling installations are life-expired. A huge investment is having to be made in upgrading Britain's busiest main line, with again massive disruption to traffic. A surprisingly high proportion of WCML passenger and freight trains are now diesel-operated, as it has never proved to be economic or convenient to change traction, possibly twice, on long-distance services which use the WCML for part of their journey.

Already Europe's busiest mixed-use main line railway, and with plans for a 20 minute-interval service between Euston and Manchester, there are dire predictions of gridlock for the WCML in the near future. Britain's 'Premier Line' could perhaps be just too popular 160 years after it was first built.



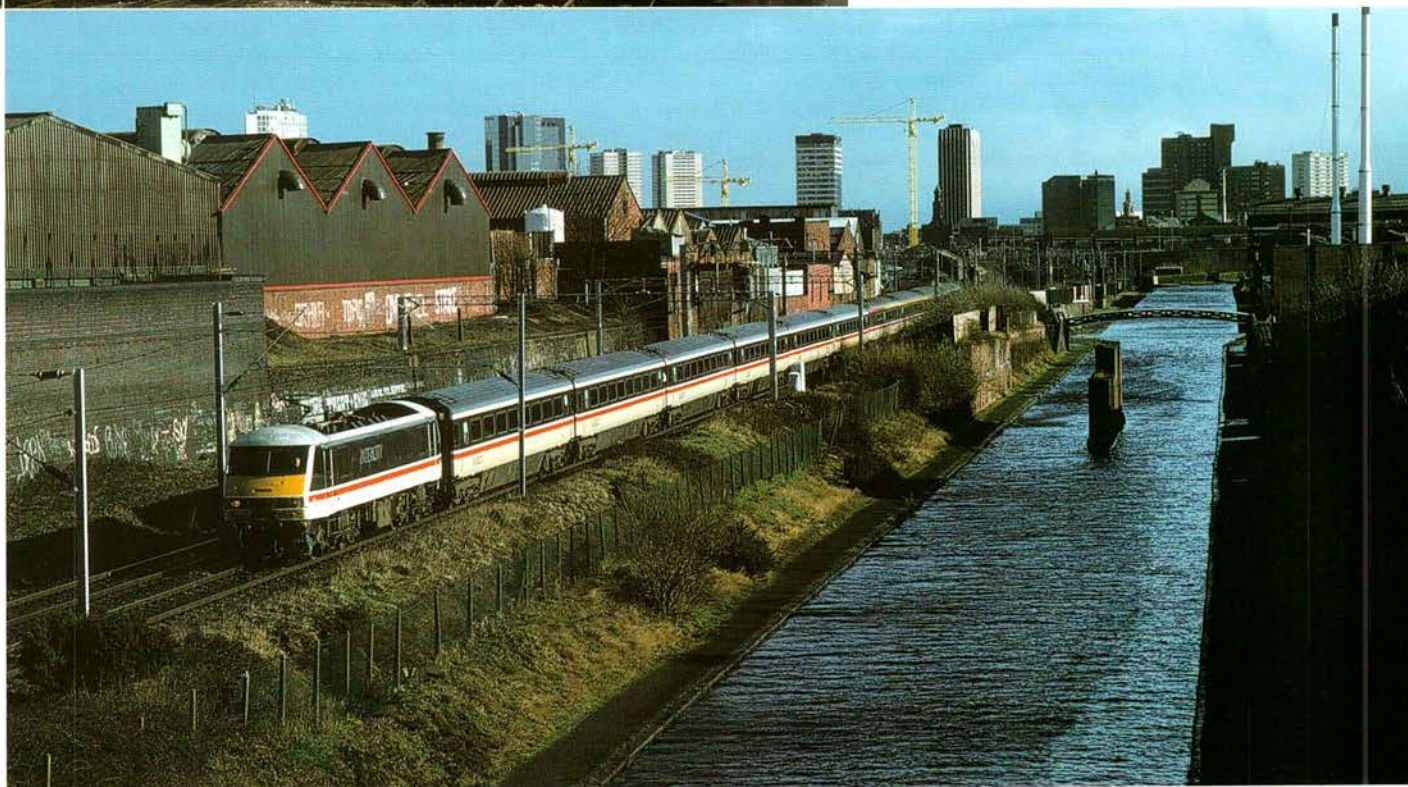
Above A Res-liveried Class 86 is on express duties in the Lune Gorge south of Tebay on 16 May 1992.



Left Class 85 (AL5) electric No 85002 heads north at Rugby on 27 March 1989.

Main In BR corporate, as opposed to electric blue livery, Class 86 E3195 heads south at Penrith on 25 July 1987 with a railtour commemorating the 150th anniversary of Euston station.

Below Still only two years old, Class 90 No 90008 in Inter-City livery heads towards Wolverhampton near Birmingham on 26 February 1990.





Southern Electric

Electric Multiple Units became synonymous with the Southern Region, but this is not where they were first used. The NER electrified its Tyneside suburban system; the LYR electrified its branch from Bury to Holcombe Brook; and the Metropolitan and other companies electrified their London underground and tube lines.

It was the commercial success of the third-rail electrification of the underground City & South London Railway which influenced the London & South Western Railway to electrify its Waterloo & City tube line. Originally, the City & South London Railway was worked by small four wheel electric locomotives, but when opened in 1898, the Waterloo & City line rolling stock was US built, with Siemens of Germany supplying the electrical equipment.

Following this, the LSWR's first surface electrification was in 1912 – for 47 miles from Waterloo to the Hampton Court and Shepperton branches and the Kingston and Hounslow loops; 84 three coach electric units were converted from former steam hauled suburban sets and electric operation from Waterloo commenced in 1915.

Also, before the First World War, the London Brighton & South Coast Railway adopted high-voltage overhead electrification. The South Eastern & Chatham Railway considered various proposals, but its scheme did not come to fruition.

So on grouping in 1923, the Southern Railway inherited two very different electrified systems – but as top management was predominantly LSWR, 660V dc third rail prevailed with multiple unit operation, a system which has

proved highly successful. No SR route was electrified at 1500V and conversion of the LBSCR overhead system to third rail started in 1928.

The 1930s saw the SR expand electrification from its suburban system into a main line network, reaching Brighton in early 1933, Hastings and Worthing on the Central section, and then the Portsmouth Direct line on the Western section.

In 1941, a 750V dc Co-Co electric locomotive was introduced, No CC1, joined by CC2 in 1945 and later joined by a third which, although primarily for freight traffic, were used by BR on Central Division boat train workings, particularly to Newhaven, now numbered 20001-3. The 25 Class 71 Bo-Bos were built in 1959/60 for similar duties; the Class 73 electro-diesels, third-rail electrics with an additional 600hp diesel engine, in 1962; after which 10 Class 71s were rebuilt as high-powered Class 74 electro-diesels for South Western section expresses.

In 1962, steam was eliminated from the whole of the SE section and virtually all of the division was electrified.

Similarly, the Central Section had been progressively electrified, and the last to be updated, still at 750V dc third rail, was the South Western Section, but only from Waterloo to Bournemouth, inaugurated in July 1967.

The SR Co-Cos were withdrawn in 1968, and both the Class 71s and 74s in 1977; 12 class 73s were designated for working Inter-City's Gatwick service, and this continued until 2005, but now only a handful remain operational in 2007 for various duties, but not confined to the SR. They have even worked Merseyrail engineers' trains.



Above Restored to original BR blue livery, 8-VEP unit No 410 leaves Clapham Junction for Waterloo in September 1992.

Above right The National Railway Museum's Class 71 E5001 approaches Shakespeare Cliff Tunnel with a railtour commemorating the closure of Dover Western Docks (Marine) station on 25 September 1994.

Right Class 73 No 73212 *Airtour Suisse* hauls a VSOE down the gradient in to Folkestone Harbour on 12 September 1991. This branch was finally to close in 2007.

Left Also part of the National Collection is 2-BIL unit No 2090, seen at Woking on 29 May 1988.





Above Class 47 No 47624 *Cyclops* climbs Upwey Bank away from Weymouth with a summer Saturday extra on 12 July 1987.

Right The SR saw motive power from the other regions; D1013 *Western Ranger* is seen at Southampton with the 'Southern Belle' railtour on 19 February 1977.



Main Class 33 No 33103 departs from Waterloo on 2 April 1977.

Below NSE-liveried Class 50 No 50044 *Exeter* departs from Exeter Central for Waterloo on 13 June 1987.



Southern Diesels

The Southern Railway-designed diesels Nos 10201 and 10202 were first used by BR Southern Region on South Western Division Bournemouth and Exeter line passenger work, with the LMR's Nos 10000 and 10001 on loan from 1953, plus from 1954 No 10203. All were removed to the LMR in 1955, never to return to the SR, leaving the region without diesels until the early 1960s.

The Southern Railway had pressed ahead with electrifying as much as it could; BR's Southern Region continued this, and never had a requirement for too many diesels, its BRCW Type 3s being adequate for most duties.

Although the region had little heavy freight traffic compared with other parts of BR, the docks, particularly at Dover and Southampton, always generated considerable traffic, much of it long-distance, inter-regional workings which brought other regions' locomotives to the south. Similarly, passenger trains to south coast resorts have traditionally led to foreign power regularly reaching the SR.

The SR lost the ex-LSWR routes west of Exeter to the WR in 1963, but these remained mostly steam-worked at the time. Gradually, as electrification spread, the only internal SR passenger services still diesel locomotive-hauled were the Bournemouth – Weymouth shuttles and the Waterloo – Exeter services, much reduced in status since the 1960s. Class 47s had internal SR duties earlier, particularly on the 'Bournemouth Belle' Pullman in the closing days of steam, but Class 33s remained staple power on the Exeter line until Class 50s, displaced from WR expresses, became available. The Exeter line became a Network SouthEast operation, not Inter-City, and the Class 50s were to be seen in NSE livery.

Expansion of aggregates traffic from the Mendips quarries led to heavy freight traffic being seen on the SR, initially often with Class 33s in pairs, but then Class 56s and eventually the privately-owned GM Class 59s. Infrastructure trains have also seen a variety of power, including the last handful of EWS Class 31s.







Eastern Electric

It was the North Eastern Railway that pioneered the use of electric traction for main line as opposed to suburban traffic, more especially for heavy freight haulage. Suburban electrification came early to Tyneside along with the short Quayside branch in Newcastle, with a pair of Bo-Bo electrics that saw 60 years service from 1905 to 1964.

The Shildon – Newport line, which used a short section of the original route of the Stockton & Darlington Railway, became Britain's first electrified main line in 1914, and although NER management had visions of electrifying its part of the East Coast Main Line, the experiment was surprisingly short-lived, due to falling traffic, rising prices and a need to renew the infrastructure. The route was de-electrified in 1934. The LNER was still keen on electrification, though, and pressed on with electrification of its trans-Pennine route from Manchester to Sheffield via Woodhead, together with the branch to Wath yard.

It was well into BR days before this was actually brought into use, but it was undoubtedly a great success. The long timescale, though, meant that technology had moved on, and by the 1950s, 25kV AC overhead seemed to offer more possibilities than 1500V DC overhead. The ER in 1949 also completed the electrification of the Liverpool Street – Shenfield suburban line at 1500V DC, commenced by the LNER before WW2. The Southend line followed in 1957.

The contraction of the coal industry and the loss of so much trans-Pennine freight traffic to the roads, led to the Woodhead route simply serving no worthwhile purpose by the 1980s and it was closed completely in July 1981, with the suburban line to Glossop and Hadfield being converted to 25kV.

The Liverpool Street routes had already been converted in 1960, and the catenary was extended to Norwich from 1987 and to King's Lynn from 1992. Liverpool Street to Norwich trains were worked by redundant ex-WCML Class 86s, until replacement by Class 90s in 2005.

Above left No 76037 heads a short freight past Torside on 28 October 1975.

Below left Class 76 No 76001 heads towards Woodhead with a freight at Torside on 28 October 1975.

Above No 76047 *Diomedes* at Torside crossing on 29 October 1975.

Right The Anglia Railways Class 86s were replaced by surplus Class 90s from the WCML. Nos 86234 and 86242 stand at Liverpool St shortly before the takeover by Class 90s in 2005.





HST & APT

Dieselisation took the form of new engines replacing similarly powered steam engines working in much the same way; it was nothing more than a change of traction. Two exciting new concepts were born later in the modernisation process though – the High-Speed Train and the Advanced Passenger Train.

The HST was actually a simple concept made possible by the ability to work two diesel locomotives in multiple, something not possible with steam. The HST simply placed the engines at opposite ends of the train instead of double heading. The coaching stock was much updated, and the diesel locomotives of Class 43 were quite basic and only 2500hp each. Running in permanently formed sets, their combined 5000hp made them fast, ie 125mph in daily service for the first time, but also fast and flexible in their turnrounds, with no locomotive run round necessary. HSTs simply took over the vast majority of WR expresses from 1976, ECML expresses from 1978, followed by MML and most NE/SW services by 1982. In 2006, electrics have displaced them from most ECML trains, and Virgin Voyagers work the NE/SW services. MML duties are reduced, but the 30-year-old HST fleet is still going strong, especially on the WR.

The other concept, the Advanced Passenger Train, was much more radical. Gas turbine propelled, articulated, and tilting to enable curves to be taken faster, it should have taken train travel to new heights, but it did not. After exhaustive testing, an electric version was built, which carried passengers on the WCML very briefly, but the ride made people sick and it was soon abandoned.

It was to be nearly another 20 years before Virgin Trains' diesel Super-Voyagers and electric Pendolinos finally made the tilting train concept work in Britain, eliminating conventional locomotive-hauled passenger trains from the WCML.

Top Inter-City-liveried HST set led by Class 43 power-car No 43061 departs from Dalwhinnie for Inverness on 25 August 1989.

Right The electric APT emerges from Linslade Tunnel while in revenue-earning WCML service on 22 August 1984.





Class 56



Brush Type 5 Co-Co

When diesels were first introduced, they tended to be designed using the criteria of mixed traffic steam engines. Few were really dedicated express engines apart from the Deltics, which were the only Type 5 for many years. For freight service, most classes were found to be adequate, and earlier designs tended to be demoted to freight traffic as newer designs were introduced. However, the patterns of freight traffic changed dramatically as pick up goods and extensive remarshalling of trains was abandoned in favour of block loads, especially of coal.

More and more classes were finding themselves extensively deployed in pairs on freight traffic, not just the Type 1s and 2s but even Type 3s. A Type 5 diesel designed specifically for heavy freight traffic was long overdue, and when one eventually arrived, it had been built in Roumania.

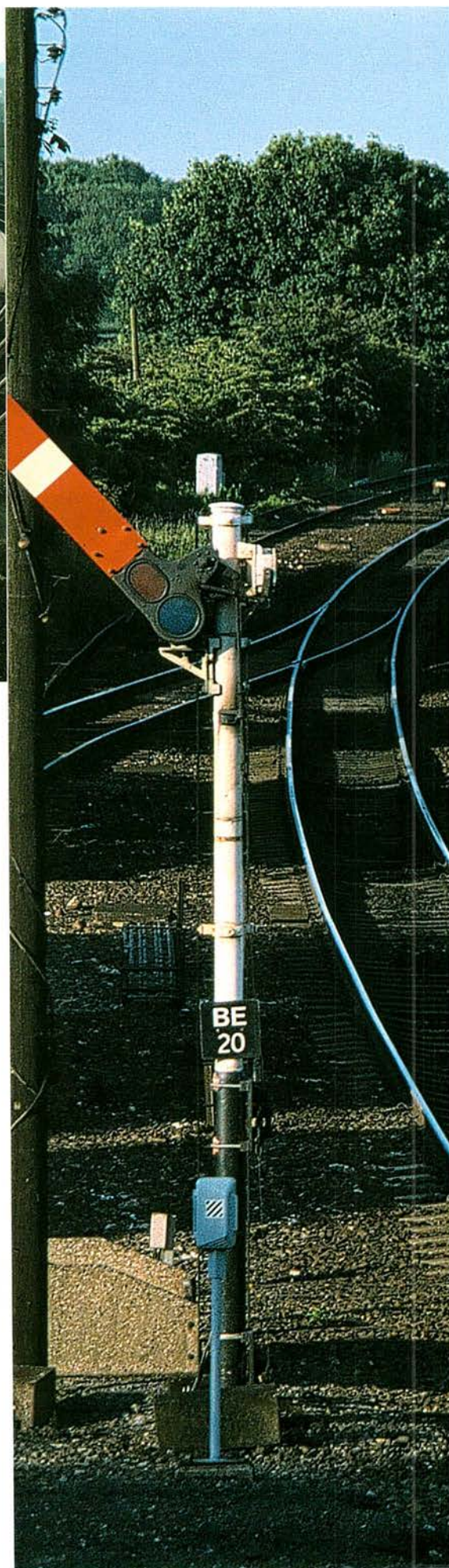
The Class 56 Co-Cos were designed by Brush to BR's specifications, using a 3250hp Ruston Paxman engine, and initially destined for MGR coal trains in the ER. Brush did not have the capacity to build them and assembly was sub-contracted to Electroputiere in Roumania. The first were delivered in 1976, but the build quality was poor and the journey caused additional damage.

It was 1977 before any turned a wheel in anger, but reliability remained poor and BREL Doncaster took over the building from No 56031. Eventually, Crewe built some as well and the class also found work on stone and iron ore trains on the WR.

The sphere of operation gradually widened, but the class was frequently demoted to menial engineers' train duties and in 2005 the last ones were withdrawn. Most have not been scrapped though; one or two entered preservation, three are back in main line service with Jarvis Fastline, and others could see further use, in Britain or perhaps even abroad.

Above BR blue No 56012 passes Wellingborough with a ballast train on 13 October 1991.

Main Transrail-liveried No 56133 hauls an Enterprise Service past Barnetby.



'Grids'



Class 58



Brel Type 5 Co-Co

Another slightly different but very different-looking Type 5 freight diesel soon followed the Class 56. Even though BREL ended up building what was essentially a Brush design, it also pressed ahead with its own radically-different design, using a similar 3300hp Ruston Paxman engine. The Class 58s were of modular construction with all the weight carried on a girder rather than by the bodywork, and it was hoped the design would lead to export orders. The sphere of operation of the Class 58s, though, was much more limited than the Class 56s, all being based at Toton for local coal traffic and longer runs to various power stations such as Didcot, plus flyash trains to the ER. The class signalled the end of corporate rail blue by appearing in a striking grey, yellow and red livery, with the

BR double arrow symbol taking the full height of the bodyside. A 'Railfreight' logo adorned the cabside and heralded a change to BR's structure, with freight and passenger operations being increasingly separated. Although a successful design and nowhere near life-expired, the class was already being phased out as coal traffic contracted, and the arrival of EWS's Class 66 to a similar specification soon spelt the end for the Class 58s. Some survive, though, and have seen service on the Continent. They seem to have no appeal for preservationists or the new generation of train operating companies, although No 58001 was restored to original livery by EWS, and No 58050 has been designated to be part of the National Collection.



'Bones'



Main In original livery, No 58015 passes Toton with a typical Class 58 working of HAA wagons in the East Midlands on 27 July 1987.

Above left On an MGR working to Didcot power station, Railfreight Coal-liveried No 58046 passes Fenny Compton on 15 February 1990.

Below Mainline blue No 58021 on an engineers' train at Rugby.

Below left On the farewell railtour for the class, EWS-liveried No 58024 passes Wainfleet returning from Skegness on 8 September 2002.





Sectorisation

BR's regions were largely based on the Big Four's boundaries and, with relatively minor adjustment, this remained the case until privatisation in 1994. However, train services had increasingly been branded, as for example Inter-City, which became an individual business unit in 1986. A sweeping reorganisation saw the beginning of separation of train operation from track and infrastructure maintenance. The regions actually remained but were much less obvious as the trains were no longer owned or operated on a regional basis. Passenger and freight trains were separated, with freight trains coming under the Railfreight, Freightliner or Infrastructure sectors. Passenger trains were subdivided into Inter-City, London & South-East and the Provincial Sector, which was further subdivided into Scotrail, and Regional Railways. In 1986 London & South-East was rebranded as Network SouthEast. Rail Express Systems was set up to run parcels and mail traffic and there was a gradual hiving off of local suburban train operations to the relevant local transport authorities. All the different sectors were to adopt different and in all cases very striking liveries, which proved a welcome contrast to the BR blue that had by then outlived its usefulness. There is little doubt that the radical restructuring and the blossoming of colourful liveries aroused considerable interest in the railways.

Railfreight was further broken down in due course into individual businesses depending on the type of traffic, the basic livery being embellished with an appropriate decal. The sectors were: coal, petroleum, metals, construction and distribution.

In the run-up to privatisation, Railfreight was subdivided in a completely different way into three autonomous businesses based on regional boundaries – Mainline, Loadhaul and Transrail. Again, the three had sufficient autonomy to select their own liveries – Transrail keeping Railfreight's triple grey, Mainline choosing blue and Loadhaul a striking black and orange. This was seen as 'shadow privatisation' with the three competing businesses preparing to be bought by private investors.

Left Sectorisation recreated in preservation; the last complete set of Inter-City coaches headed by matching No 47826 meets NSE-liveried No 50027 *Lion* on the North Yorkshire Moors Railway at Goathland on 27 April 2002.

Middle left NSE operated locomotive-hauled trains to Kings Lynn prior to electrification. No 47581 *Great Eastern* leaves Kings Lynn on 22 July 1989.

Below left Rail Express Systems' red-liveried No 47605 heads a mixed rake of stock past Reedham towards Yarmouth on 27 June 1992.

Main In Railfreight Metals sub-sector livery, Class 37 No 37719 passes Marshbrook with a railtour on 16 April 1989.







Black Diamonds

Britain's railways have always been inextricably linked with coal. Most of the early tramways and railways were built to transport coal and, once steam power was introduced, it was coal that propelled the trains. Right up to and beyond the end of steam, coal formed a huge proportion of BR's total traffic, and the nature of its transportation had changed little since the early days of railways.

Coal was mined in the traditional mining areas, and what was not used locally was transported by rail, either to nearby docks or to large industrial areas or conurbations for industrial use, or to every corner of Britain for domestic use. The first-generation diesels simply took over haulage of the established flows of coal traffic, for example from Yorkshire to London.

There were already some changes taking place. The establishment of huge, coal-fired power stations in or near the mining areas was leading to even more concentrated short-haul operations. Pollution control and the Clean Air Act, and the spread of gas and oil central heating, was dramatically reducing demand for domestic coal, especially in cities. BR's standard 16-ton mineral wagons had replaced thousands of wooden-bodied vehicles, and these were supplemented by 21-ton hoppers. The four-wheel HAA wagon was introduced by BR specifically for Merry-Go-Round working from pit to power station, the HAAs being introduced simultaneously with diesels.

In the 1980s, Railfreight began to form a more autonomous part of BR's business, and when individual business units were introduced, one was Railfreight Coal with its individual locomotive livery. This was to last until the subdivision of

freight haulage instead into Transrail, Loadhaul and Mainline. By then though, privatisation had already happened in the power generation industry, and it was National Power which spearheaded the privatisation of the railways by purchasing its own engines and wagons for specific short coal flows in Yorkshire.

The decimation of the coal industry led to the rapid extinction of the 16-ton mineral wagon and most coal traffic other than to power stations, much of which is now imported. New generations of coal wagon were introduced, mostly now being of bogie design.

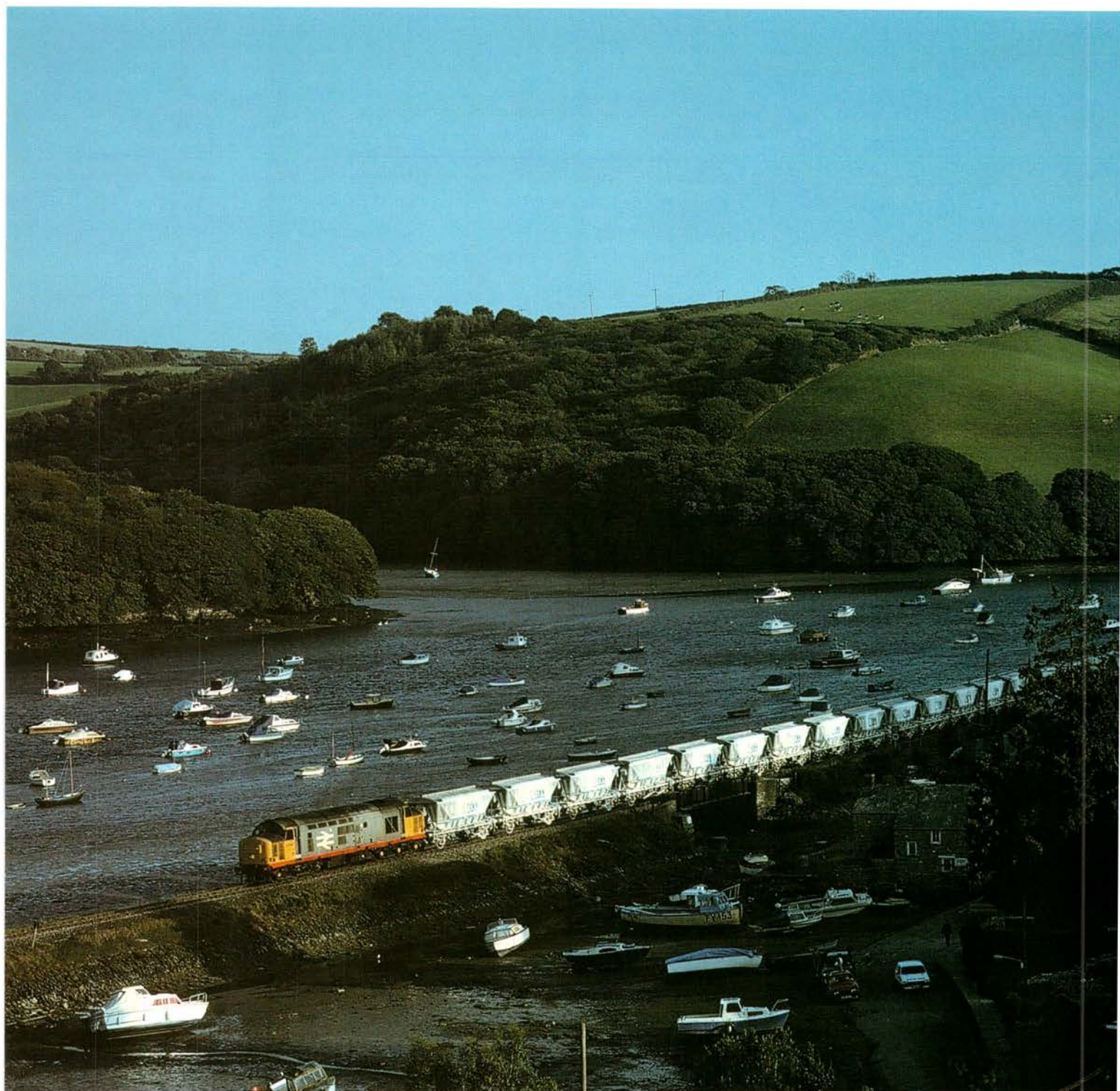
After privatisation, EWS found that its lucrative flows of coal traffic were among the most attractive for new operators, and Freightliner Heavy Haul and First GBRf now share the business, major long-distance flows being from Immingham Docks and from Hunterston in Scotland via the GSWR and S&C to West Yorkshire power stations.

Above Railfreight Coal-liveried No 58043 passes Trent Junction with an MGR coal train on 6 September 1989.

Top left Coal traffic steam age style. Class 37 No 6951 with 16-ton mineral wagons passes the colliery at Ledston, near Castleford, on 17 April 1973.

Above left For several years a Speedlink system operated by Railfreight distributed household coal round the country in four-wheeled hoppers. A Class 37 No 37217 passes Harbury on 30 March 1989, two years before the demise of Speedlink.

Left Class 66/9 No 66951 tops Ais Gill summit with a train of imported coal from Hunterston on 2 November 2006.



Cornish China Clay

The late 1980s were perhaps the golden years of British diesel traction. BR blue was abandoned in favour of much more interesting liveries and, although some first-generation types disappeared towards the end of the decade, there was as much variety of traction as ever. The replacement of down-at-heel diesel hydraulics and Class 25s by refurbished, reliveried and obviously cared-for Class 37s in Cornwall led to an awakening of interest among enthusiasts.

This was an interesting, self-contained system centred on St Blazey depot, itself of interest with its Cornwall Mineral Railway half-roundhouse a listed structure. Trains of china clay ran from various pits and 'dries', mostly to the harbour at Carne Point, Fowey, along the scenic branch from

Lostwithiel. The wooden china clay 'hood' wagons, associated with the steam age, were replaced by a modified design of HAA coal wagons, known as CDA.

A couple of long-distance freight flows added interest, particularly tanks of china clay slurry to Ayrshire, later the Potteries. The small fleet of Class 37/6s in Railfreight red-stripe livery, some with Cornish names, was supplemented by the occasional Class 46, 47 and 50 and, for a while, the unique No 50149 *Defiance*. EWS Class 66s took over in the 1990s and traffic contracted. Current proposals by Imerys, which produces the china clay, envisage importing supplies from Brazil, possibly leading to a total cessation of freight traffic in Cornwall and closure of branches.



Above Class 37 No 37672 Freight Transport Association arrives at Lostwithiel on 20 June 1988 with the new CDA wagons passing now-withdrawn china clay 'hoods'.

Above left The solitary Class 50/1 No 50149 *Defiance* approaches Carne Point at Golant on 7 April 1988

Main Class 37 No 37669 heads empties from Carne Point past Golant on 20 September 1989.

Left Reviving memories of diesel-hydraulic days in the Duchy, preserved D1015 *Western Champion* leaves Par on 30 August 2002 with a china clay train operated in connection with an EWS staff event at St Blazey depot.

Class 59



Above Class 59-hauled passenger workings have always been much sought after by enthusiasts. Foster Yeoman No 59005 *Kenneth J Painter* works an Old Oak Common open day special past Westbourne Park on 18 August 1991.

Right ARC-liveried No 59104 works a special past Ely Dock Junction on 14 September 1991.

Main Foster Yeoman No 59003 *Yeoman Highlander* passes Fairwood Junction, Westbury, with a stone train on 23 August 1989.

Below A National Power Class 59/1 with matching wagons approaches Eggborough power station in September 1996.





General Motors Type 5 Co-Co

At first, the Class 59s were a welcome sight on Britain's railway system, as they were few in number and privately owned, carrying distinctive liveries. They signified a very major departure from what had gone before, in that they were American. The 3300hp design was based on the builder's proven SD40-2, but with British modifications and a completely different appearance.

Foster Yeoman was concerned at the poor performance of BR's Class 56s on its aggregates traffic from Merehead quarry in Somerset. The company imported the first four Class 59s from General Motors in 1986, and their performance on stone trains from the Mendips to various locations across the south of England was superb. In stylish silver livery, they pioneered the use of big privately owned diesel traction on the national system. Foster Yeoman bought

another one and in 1990 ARC, which also operated an aggregates quarry nearby, invested in four, and these sported ARC's yellow livery.

Foster Yeoman and ARC combined their joint resources under the Mendip Rail banner in 1993, but some autonomy remained, and ARC is now owned by Hanson. Also, No 59003 was sent to Germany.

An even braver initiative came from National Power after privatisation of the electricity supply industry, when in 1993 it bought six class 59/1s and a fleet of bogie coal wagons to bring the transportation of coal from Yorkshire pits to nearby power stations under its own control. This was a successful experiment, but proved unnecessary after privatisation of the railways. The class 59/1s were acquired by EWS in 1998 and moved south.



The Road to the Isles

The routes in the Highlands of Scotland were among the first in Britain to be completely dieselised, the BRCW Type 2s simply taking over all duties from 1961/62. The NBL Type 2s were drafted in for a while, but the BRCW ones won the day eventually and had a long reign. The twisting nature of the routes appeared to preclude the use of Co-Co types, but eventually English Electric Type 3s were tried again in the early 1980s and very quickly came to

monopolise the routes. The last of the Class 26s disappeared by 1983, and the West Highland became the almost exclusive preserve of the Class 37, largely because it was the only class to be fitted with radio-signalling equipment.

The BR blue era was coming to an end, and Eastfield depot was one of the first to experiment with some depot originality. This ultimately led to the large-logo blue livery with wrap-round yellow ends and, of course, the Scottie dog emblem.

Enthusiasts were quick to recognise the attractions of the area and its motive power, particularly as it was inevitable that DMU operation simply could not be far away. The first Sprinter was tested at Fort William in September 1987, and their takeover was quick and almost total.

But there were still numerous railtours, the Euston sleeper and land cruise trains, and freight traffic appeared to expand consistently.

With sectorisation leading to even more variety of liveries on what was still a sizeable fleet of Class 37s, the Road to the Isles still had its attractions right up to the end of the century.

More recently, freight traffic has contracted; the sleeper is a Class 67; and privatisation has led to such classes as 31, 33 and 47 being seen on various special duties. The golden age of the West Highland in the diesel era is little more than a memory now, but it can still occasionally recapture its magic, if only briefly.





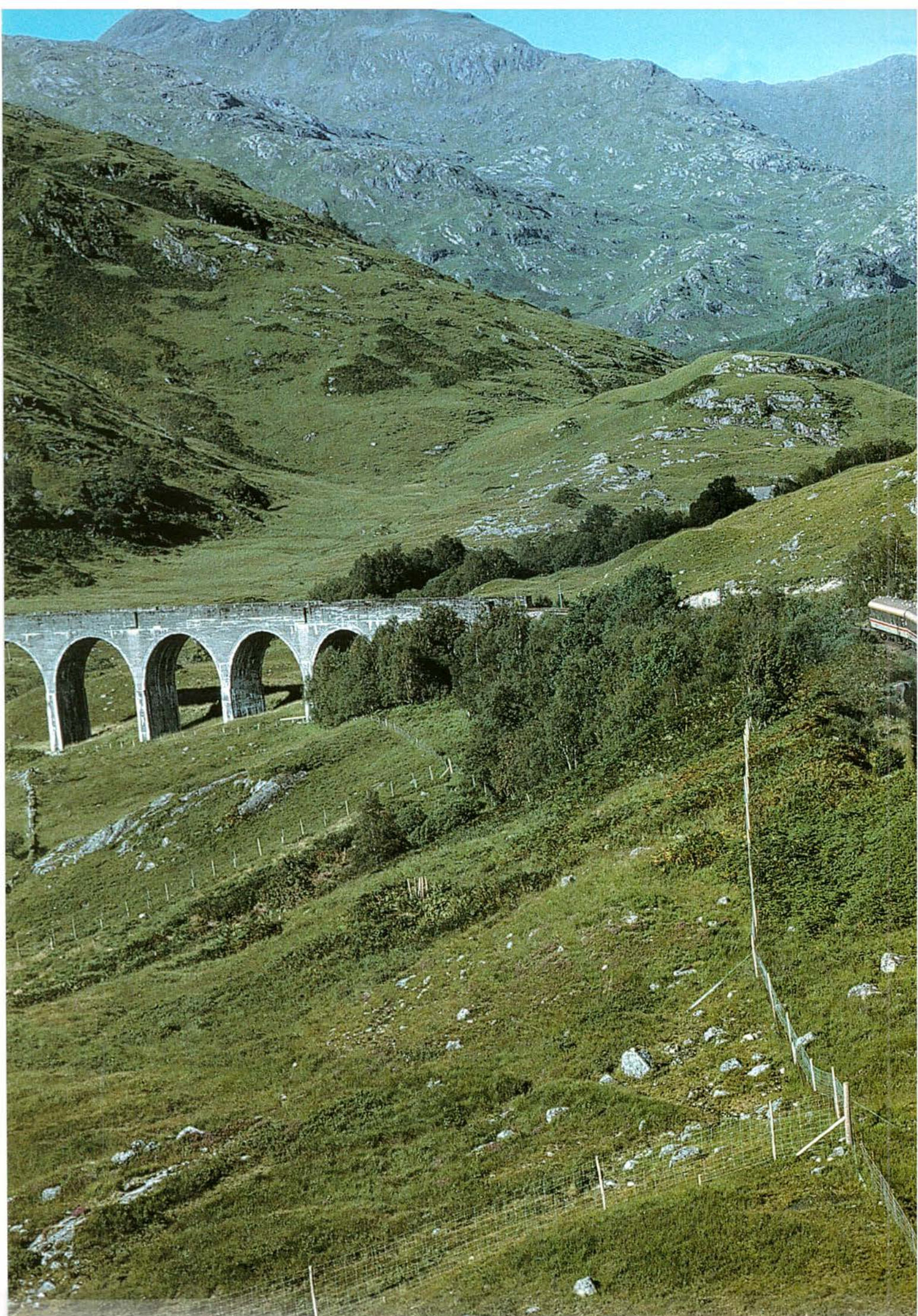
Above left No 37407 *Loch Long* heads along the shores of Loch Eilt towards Lochailort on 2 April 1988

Top No 37408 *Loch Rannoch* drops down the grade past Kinlaid on 28 October 1987, the islands of Rhum, Eigg and Muck forming a backdrop.

Left It's 10 degrees below freezing as Class 37 No 37413 *Loch Eil Outward Bound* shunts at Fort William yard on 1 December 1989.

Above No 37408 *Loch Rannoch* crosses Banavie swing bridge with a Mallaig train on 28 October 1987.

Over page No 37406 *The Saltire Society* accelerates off Glenfinnan Viaduct with an Inter-City land cruise train on 10 September 1989.





Class 60



Brush Type 5 Co-Co

British industry fought back against the inroads of American big business in the form of the General Motors salesmen. The Class 60s were to prove to be the last main line diesel locomotives to be built in Britain. It has to be said that it was not a very exciting design visually, and the building was politically motivated.

Foster Yeoman's Class 59s were so good that the various sectors of Railfreight wanted them as well, but in response to pressure from Britain's locomotive building industry, BR asked the home market to tender for construction of a new type 5.

Three were received: Metropolitan-Cammell's was out of the question; GEC's would have been the GM design built locally which was politically incorrect; and Brush won the competition with a design using a Mirrlees 3100hp engine.

No 60001 *Steadfast* took to the rails in 1987, but it took six years to get all 100 in service and, in complete contrast to the Class 59s, they had a catalogue of faults, not just with computer software, but with the hardware as well. In fact,

with most of the fleet sitting in the Brush yard at Loughborough waiting to be fixed, BR nearly cancelled the order after the first 40.

The introduction of the Class 60 had a cascading effect on the fleets of other locomotive classes. The Class 33s were displaced from aggregates, Class 20s lost their coal duties and the Class 31s finished with their petroleum work. They have settled down and been useful engines, but overall proved to be a sad epitaph for the British locomotive building industry. They remain in use with EWS but are unpopular and many are in storage.

Above For their early testing, Class 60s acted as pilots to Class 56s on stone trains from Mountsorrel. No 60009 *Carnedd Dafydd* leads a Class 56 through Melton Mowbray on 30 April 1990.

Above right Class 60s were produced in bulk by Brush at Loughborough New locomotives including Nos 60059 and 60051 stand in the yard awaiting delivery.

Right No 60047 *Robert Owen* departs from Paddington with a special in connection with the Old Oak Common depot open day on 18 August 1991.

'Tugs'





Top Tinsley-allocated Class 37s No 37380 and 37683 leave Shrewsbury and pass Sutton Bridge Junction with the Birmingham-Aberystwyth train on 3 Sep 1988.

Above Class 37 No 37428 *David Lloyd George* crosses Penrhyndeudraeth trestle with the early morning train from Pwllheli on 17 June 1989

Above right Nos 37684 and 37680 leave Dovey Junction and approach Glandyfi on the last lap to Aberystwyth on 1 October 1988.

Right In 1992, Class 31s had taken over the remaining locomotive-hauled working; Class 31s No 31147 and 31146 cross Barmouth Bridge on 6 June 1992.



Cambrian Coast

It is one of Britain's classic stretches of railway – the coastal route along Cardigan Bay, built by the Aberystwyth & Welsh Coast Railway, later part of the Cambrian Railways.

Other than the noted stretch of the GWR along the Dawlish sea wall, there are few stretches of scenic coastal railway line in Britain. Fortunately, it survived the Beeching cuts and, although freight traffic disappeared and passenger trains were obvious candidates for operation by two-car DMUs, there was still sufficient demand on summer Saturdays for lengthy formations of locomotive-hauled stock. These became some of the last such trains to run in Britain and it was not just one train – even up to the late 1980s, there was something of a procession in each direction.

In the diesel era, the Class 24 BR/Sulzer Bo-Bos were always associated with the Cambrian Coast route, although later Class 20s and Class 31s appeared. Class 37s though became an accepted part of the scene, with Cardiff Canton's ETH-fitted Class 37/4s not only working the Welsh Marches route, but having a daily working to Aberystwyth, the 'Cambrian Coast Express', and a summer Saturday train to and from Pwllheli.

There were not enough to cover the summer Saturday extras to Aberystwyth and the afternoon train to Pwllheli as well. These became regular duties for Tinsley no-heat Class 37/0s, supplemented by Class 37/6s on their days off from

Peak Forest stone train haulage. The Class 37 domination of the route was fairly short-lived, and by 1992 only the afternoon Pwllheli train remained, and that usually sported a pair of Infrastructure Class 31s at the head-end. Barmouth Bridge became a problem leading to a ban on locomotive workings across the bridge which was not lifted until 2006.





Heritage Lines

Modern traction has been seen on heritage lines almost from their inception. The pioneer narrow gauge line, the Talylyn, and the pioneer standard gauge one, the Bluebell, have always claimed to be 100 per cent steam until recent years, but the Ffestiniog Railway was running a four-wheeled petrol-engined Simplex in 1955.

Diesel shunters, often of industrial origin, have proved their worth on all heritage lines now, but the idea of a main line diesel hauling passenger trains on a preserved steam railway was surely unthinkable.

At first, a few Class 24 and 25 Bo-Bos were bought primarily as standby engines and as fire-risk steam substitutes, particularly on the North Yorkshire Moors Railway. It was the wholesale withdrawal of the much-loved diesel-hydraulic fleet by BR which prompted more serious modern traction preservation, and they were never going to be static exhibits. D1062 *Western Courier*, purchased by the Western Locomotive Association, was the first privately-owned big main line diesel to haul a public passenger train, a railtour, on the Torbay Steam Railway, now Paignton & Dartmouth Railway, on 31 July 1977.

As more classic diesel classes began to be rendered extinct, the attraction of buying an engine spread. At first, withdrawn engines were cannibalised for spares, but once

the last class members were withdrawn, they could be purchased complete and in good condition at reasonable prices. They had their uses on heritage lines, and eventually became attractions in their own right.

Diesel galas are now an accepted part of the calendar on even the most pro-steam lines, and for diesel enthusiasts nostalgic for their own period of modern traction history, it is now possible to get involved in keeping these now-historic locomotives in service.

Above The use of main line diesels on heritage lines has produced some unprecedented sights. Preserved Deltics D9000 *Royal Scots Grey* and D9016 *Gordon Highlander* are seen on the Paignton & Dartmouth Railway on 21 June 1992.

Opposite top BR blue-liveried Class 52 D1013 *Western Ranger* heads a Severn Valley Railway train out of Bewdley towards Foley Park Tunnel on 14 October 1990.

Opposite middle Class 31 No 31207 in 1980s Railfreight livery hauls 1950s BR-liveried coaches along the North Norfolk coast out of Sheringham on New Year's Day 2007.

Opposite bottom Class 40 D306 *Atlantic Conveyor* works a train of four-wheeled vans through Wansford station on the Nene Valley Railway on 8 July 1994. WCML-allocated Class 40s had regular workings along this line in the mid-1960s on Birmingham to Norwich trains.





Above The Brush prototype Co-Co No 89001 *Avocet* at Peterborough on 15 July 1988 with an evening commuter train from King's Cross formed of HST stock on 15 June 1988.

Right An unusual instance of a Class 91 hauling Mk1 stock. A special working of Inter-City stock speeds north past the brickworks at Fletton on 2 June 1992.

Below GNER Class 91 No 91005 *Durham Cathedral* pauses at Doncaster on 3 February 2007.





East Coast Electric

Once the West Coast Main line was electrified, it was always expected that the East Coast would follow, but it was some years before work started. The Deltics and Class 47s, followed by the HSTs, proved more than competent and electrification was not considered urgent. In the meantime, the suburban lines out of King's Cross to Cambridge and Peterborough were energized in 1982.

The eventual plan was to run IC225s as opposed to IC125s, the 225 referring to kph not mph, but at the same time it was electrification on the cheap by comparison with the WCML. Virtually no electrically-hauled freight traffic was ever envisaged on the ECML, and only the bare minimum of sidings and yards were given the luxury of catenary.

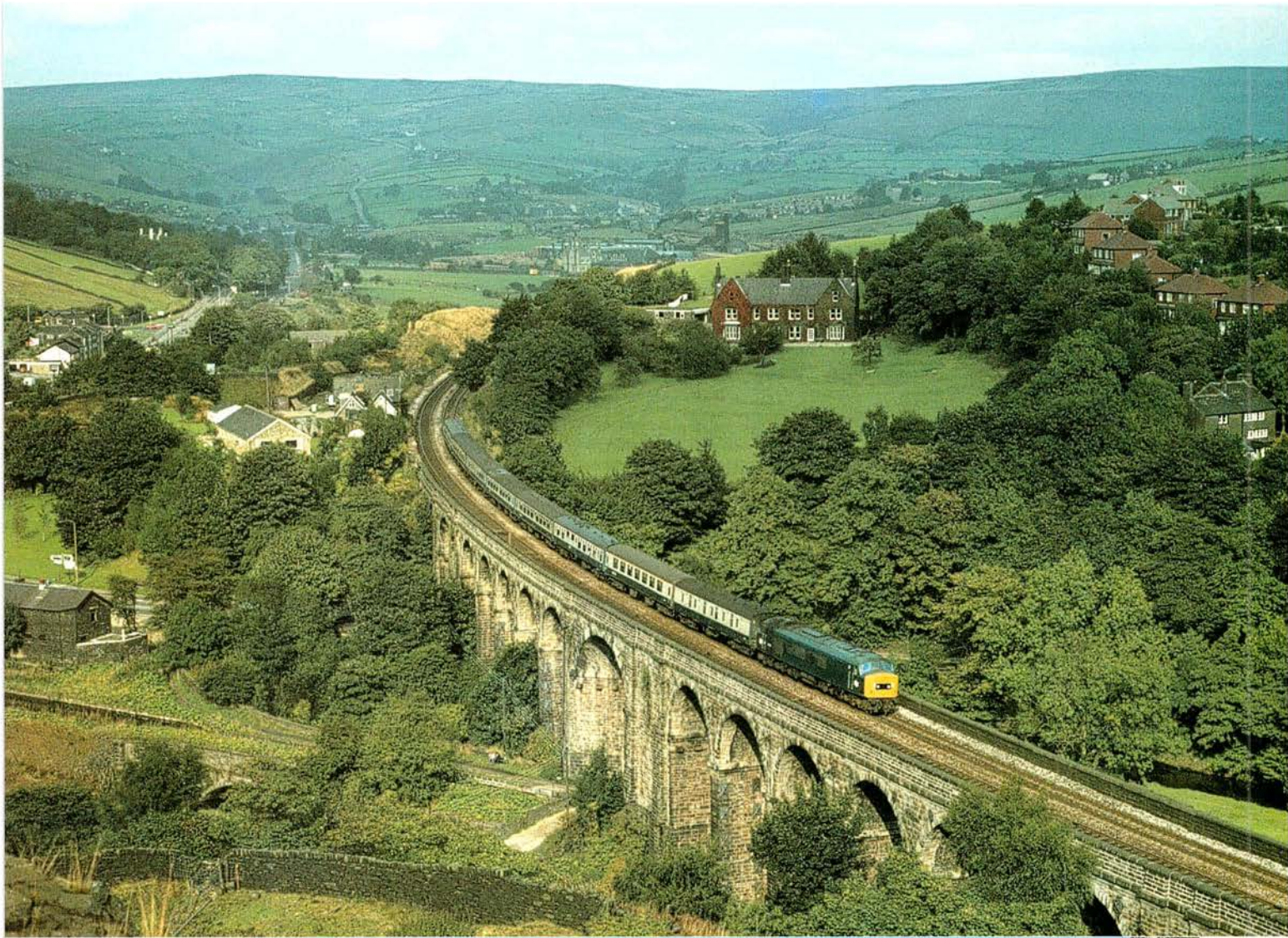
Brush designed and BR built the prototype Co-Co Class 89 No 89001 in 1986 but, although it was extensively tested, technology was moving on and a different concept was to find favour on the ECML. No 89001 was built as much for power as speed and would have been more use on WCML heavy freight services. The Class 91s were single-ended

Bo-Bos designed to run in fixed formation with a driving trailer at the opposite (usually London) end.

When the Class 91s started to make their first tentative trial runs in 1988, there was little doubt that they were fast and would uphold the route's proud tradition of speed. The Class 91s have totally monopolised ECML electric workings, at least until recent years, with the notable exception of the Class 89 for a few years.

Just as Doncaster was the only BR works to produce electric locomotives for the West Coast until the much later Class 87s, so the East Coast flagships were built at Crewe, 31 in total. Since privatisation, the acquisition of redundant WCML electrics by smaller TOCs has seen their sphere of operation widen, and now it is possible to see the occasional Class 86, 87 and 90 on the ECML, and even Class 92s on charter or freight work.

From 2001 to 2005, two spare Eurostar sets were hired by GNER which brought much-needed extra capacity and variety to the route, particularly when the Eusostar-liveried set was in use.



Trans-Pennine

The Pennines separate two of Britain's most densely-populated and heavily-industrialised areas. This geographical situation led to the construction of some interesting railway routes, the first actually being George Stephenson's Newcastle & Carlisle Railway. While the Midland Railway crossed the Pennines with its main line to Manchester, its Leeds – Carlisle line and the, then secondary, Hope Valley route, and the Manchester Sheffield & Lincolnshire Railway built the Woodhead route, it is the ones in between which have been marketed as Trans-Pennine – the London & North Western's Standedge route and the Lancashire & Yorkshire's Calder Valley. Liverpool to Newcastle was always a premier passenger route, with expresses becoming concentrated on the route via Standedge in BR days, and English Electric Type 4s were quickly allocated to these duties. For Liverpool to Hull

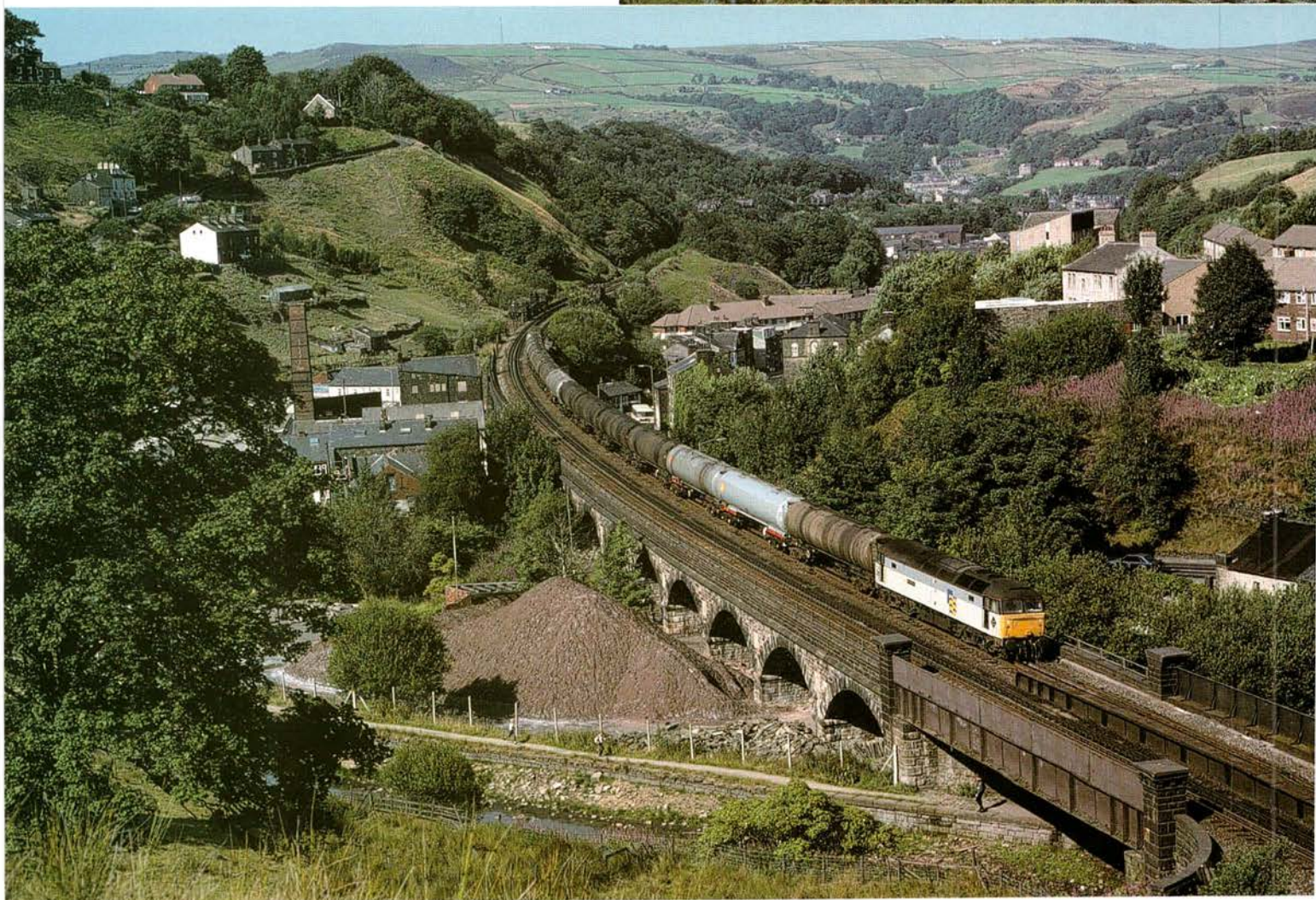
trains by the same route, a specific type of DMU was introduced, the Class 124, designated as Trans-Pennine units. Local services on both routes were early candidates for DMU operation; steam remained though on many freight services until September 1967. Class 40s, supplemented by Class 25s, were staple motive power for most Trans-Pennine freight traffic throughout the 1970s, although the Trans-Pennine DMUs were withdrawn, and Peaks and Class 47s took over the Newcastle expresses until the coming of privatisation and the second-generation DMUs suitable for long-distance service. The same downturn in traffic which led to the closure of the Woodhead route led to freight traffic virtually disappearing from Standedge and the Calder Valley, although there has been something of a revival with Freightliner oil and coal trains crossing the Pennines, more especially via the Calder Valley / Copy Pit line.

Left A Class 45 heads a Newcastle – Liverpool express over Saddleworth Viaduct on 28 September 1979.

Below left Class 47/4s took over many of the locomotive-hauled expresses in the 1980s. No 47407 has just emerged from Standedge Tunnel at Marsden on 2 October 1989.

Right The Copy Pit route from Burnley to Todmorden was run down almost to the point of closure, but has had a passenger service reinstated, and sees regular freight traffic as well as excursions. An unusual sight is No 47820 on a VSOE special descending from the summit towards Todmorden on 24 March 1990.

Below The Calder Valley route has become the principal trans-Pennine route for oil traffic to Ellesmere Port and Stanlow. No 47196 crosses Gauxholme Viaduct at Todmorden on 4 August 1989





East Coast Holidays

Not everyone goes abroad for their summer holidays, or even to the south-west. Many of the well-known east coast holiday resorts owe their existence to the railways, which developed passenger traffic to the resorts of their choice.

Reaching a peak between the wars, summer Saturday holiday traffic was big business for the railways, and remained so well into BR days, until the phenomenal growth in private car ownership in the 1960s.

While traffic did then reduce, leading to closure of some branches such as Mablethorpe and Hunstanton, and an end to the traditional locomotive-hauled summer Saturday extras to resorts such as Lowestoft, Cromer and Cleethorpes,

the resorts of Skegness and Yarmouth in particular held on to quite intensive services of real trains on Saturdays, even into the 1990s.

Both resorts traditionally saw trains from London, started by the Great Northern and Great Eastern railways respectively, but also from the Midlands and north of England, many being direct descendants of Midland Railway services, using running powers over the Great Northern or the Midland & Great Northern Joint Railway.

The steam age tradition of using spare goods engines for a Saturday thrash to the seaside was also perpetuated by BR into the diesel era, with the Class 20s especially becoming legendary for their exploits on 'Jolly Fisherman'



excursions to Skegness. Class 25s were also regular power, but Class 31s, 37s, 40s, 45s, 46s and even Deltics all appeared.

Even now the tradition is not quite dead, with One extending certain Liverpool Street to Norwich expresses through to Yarmouth on summer Saturdays, the whole train hauled to the seaside by a hired-in Class 47.

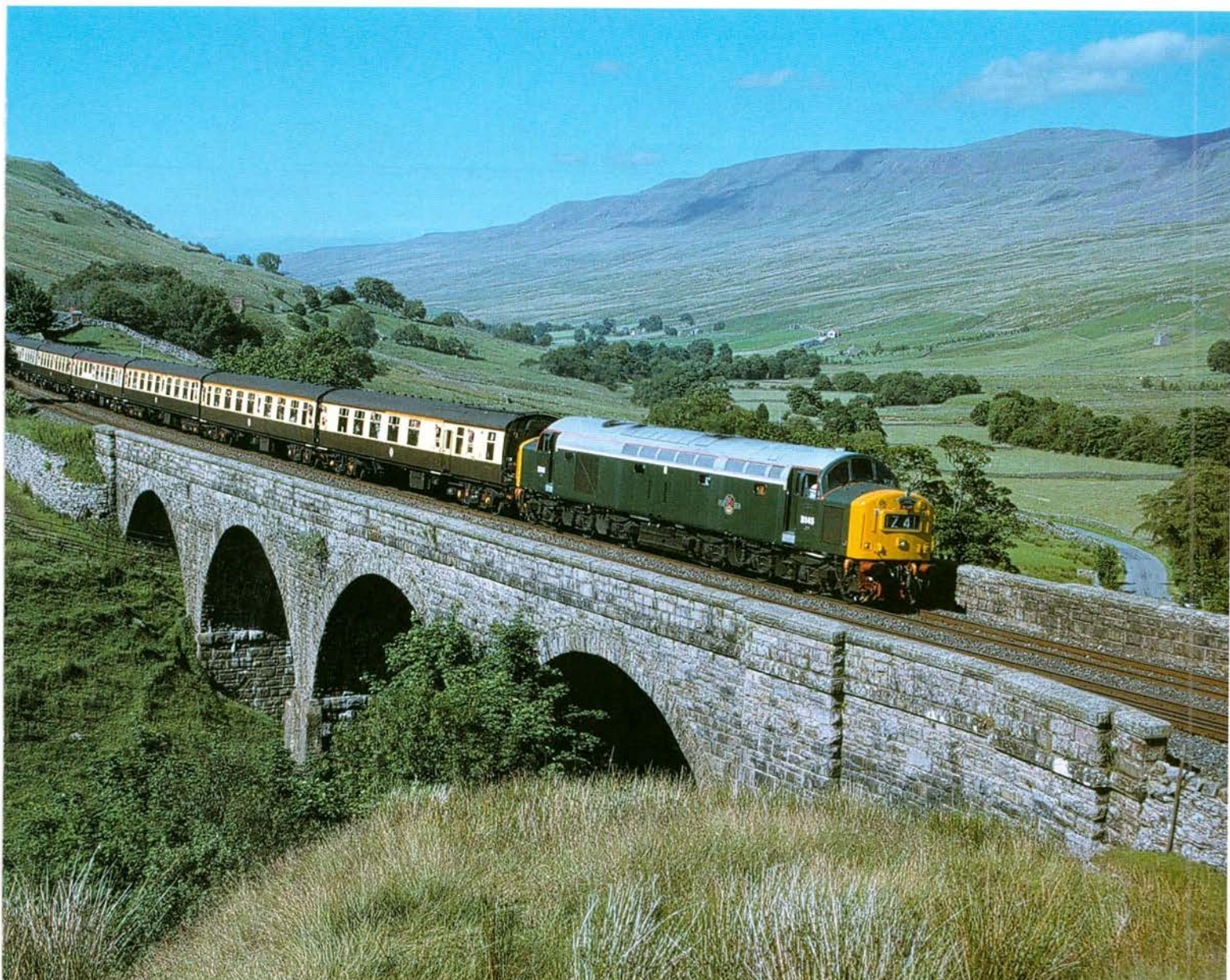
Above left Class 20s Nos 20042 and 20034 arrive at Boston with a Sheffield to Skegness train on 10 September 1988.

Left An Inter-City Class 47 passes Thorpe Culvert, then still with GN somersault signal, on 16 June 1990.

Top Class 31 No 31198 and 31186 pass the impressive semaphores east of Sleaford station with a train from King's Cross to Skegness on 6 September 1975.

Above Newly-painted in Infrastructure grey livery, Class 31 No 31308 shunts its stock at Skegness on 30 June 1990.





Settle & Carlisle

One of Britain's legendary rail routes, the Settle & Carlisle, probably should not have been built at all, but has survived and now prospers against all the odds.

A line which remained predominantly steam-worked well into the 1960s, expresses and freights tended to be worked by Leeds Holbeck-based Peaks and Carlisle-based Class 40s in the diesel era, supported by Class 25s. Gradually Class 47s took over more workings.

Services were dramatically run down in the period leading to planned closure, with an end to scheduled freights and closure of most intermediate stations. This led to a big increase in the line's popularity for railtours and excursions. Part of the run-down was the withdrawal of through expresses, while the stopping services were almost exclusively DMU-operated.

Eventually closure was averted and some repairs and upgrading took place, which cost nowhere near the earlier estimates. Passenger traffic grew, intermediate stations were reopened and refurbished and eventually the occasional freight train used the route again.

Services were upgraded and Class 31s, newly-reallocated to the LMR and Leeds area, took over with assistance from Class 47s. In the 1990s, the contraction of the coal industry, which eradicated coal trains from many part of

Britain, led to more dramatic developments as Aire Valley power station coal started to be imported in huge quantities through Hunterston and transported over the S&C.

Even gypsum traffic started from Long Meg, used for environmental pollution control purposes at the same power stations. Clearly the situation could change again overnight, but at present the line is operating at near full capacity, with regular use as a diversionary route. The traffic is taking its toll though, and massive track relaying exercises have had to be undertaken.

Above Preserved Class 40 D345 crosses Ais Gill viaduct with a railtour on 12 July 2003.

Above left Class 20s Nos 20061 and 20093, with No 47444 providing train heat, approach Ribbleshead with a southbound railtour on 25 Nov 1989.

Left On a test working prior to the reintroduction of freight traffic to the route, Class 60 No 60006 *Great Gable* approaches Blea Moor tunnel at Dent Head on 21 September 1990.

Bottom left Class 47 No 47809 runs downhill at Baron Wood with a tour consisting of the ex-'Manchester Pullman', now 'Statesman' stock on 16 May 1992.

Railtours

It is better to travel hopefully than to arrive'. The difference between a railtour and any other special train is that a railtour does not necessarily have a destination. It is the route and the motive power that are important. In steam days, there were such infinite combinations of routes and locomotive types, plus spare coaching stock, that bizarre railtours at incredibly cheap prices were commonplace. As steam ended, the railway system also contracted, and railtours started to often be 'last trains', usually with steam.

It took a while before the concept of the railtour returned to the BR system in the diesel era. There were 'Merrymaker' trips, and still last trains to somewhere, or last trains hauled by a particular class, but many of these were really just special trains to a destination. Gradually, the ambitious tours with a multitude of different

classes, penetrating the very end of obscure and long-forgotten branches, became popular again. Such phenomena as 'haulage-bashers' and 'track-bashers' emerged, whose sole aim in life was to cover every piece of track in Britain or be hauled by every single engine, taking the age-old concept of trainspotting to new heights. Availability of coaching stock was always going to be problematical as locomotive-hauled trains disappeared rapidly from the system and coaching stock was scrapped, but privatisation saw a resurgence in railtour possibilities.

In the era of privatisation, tours are run by private operators using stock provided by private companies and hauled by engines from a variety of owners or operators, facilitated by a train operating company, some of which deal only with special passenger workings.



Above The 'Three to the Sea' tour of 2 May 1987 featured treble headed Class 20s Nos 20030, 20064 River and 20118 from Sheffield to Brighton, passing Foxlow Junction near the start of the tour.

Left A rare use of non-BR traction occurred on 7 July 1984 when London Transport's Metropolitan Railway Bo-Bo electric No 12 *Sarah Siddons* worked a tour of the Southern Region, here approaching Chichester.

Above right D9009 *Alycidon* brings up the rear of the four-day Deltic Preservation Society 'Freedom of Scotland' tour approaching Arisaig on the West Highland line on 26 June 2003. The maroon MK1 stock is provided by the West Coast Railway Company.

Right One of the many Class 50 farewell railtours, formed of the Pilkington green-liveried coaches, passes Barrow Hill on 5 June 1993. Along with No 50007 *Sir Edward Elgar* and D400 *Fearless*, the train was used to deliver No 50033 *Glorious* for preservation at the National Railway Museum.





Teesside

The north-east was very much the cradle of railways in the industrial revolution; George Stephenson's Stockton & Darlington Railway effectively starting the ball rolling in 1825, the destination being the docks on the Tees for onward shipping of coal, as opposed to the town of Stockton.

Already though, a network of private waggonways covered the north-east and, while this soon developed into a labyrinth of routes which saw intensive coal traffic throughout the coalfields of Northumberland and County Durham, this traditional railway had virtually disappeared by the 1980s.

The Stockton & Darlington had quickly extended to 'a collection of huts' alongside the Tees where the water was deeper; new docks were built and this developed into Middlesbrough.

In the late 1980s, enthusiasts' interest also transferred

south, again to Teesside, where by then steel traffic and associated workings were concentrated. Thornaby yard and depot, although much reduced in size, was still the centre for a variety of workings, against a grim industrial backdrop in much of the immediate area but running to or from some particularly scenic branch lines.

A daily stone train ran to Redmire on the Wensleydale branch, cement trains came from Weardale and the coastal route had been reopened beyond Skinningrove to Europe's biggest potash mine at Boulby.

Pairs of Class 37s enjoyed their finest hour on heavy steel trains to South Wales, the Potteries and Corby, while Class 20s, 31s and 47s still had a substantial presence in the area. It was a shortlived period though, as first Class 56s, then 66s took over and both the Weardale and Wensleydale branches closed.



Main Class 37s No 37517 and 37514 head away from the steelworks at South Bank with limestone empties for the Redmire branch on 17 August 1989.

Top With the lifting bridge over the Tees as a backdrop, well-worn BR blue-liveried Class 37 No 37083 heads towards Middlesbrough on 17 August 1989

Above Class 20s Nos 20144 and 20119 head for Boulby mine with empty Potash wagons past Carlin How on 26 October 1989.

Open Days

The concept of the 'open day' has its origins way back in the early days of railways, when major exhibitions, mainly of the latest locomotives and stock, were staged by railway companies; and depots, sheds or works were opened to the public for special events.

By the 1960s, as steam was phased out and more modern traction took over, the concept of a Derby Works Open Day, for example, was a well-established annual event in the enthusiasts' calendar. The whole of the works were opened to the public; a display was usually staged of a couple of newly-overhauled engines, diesel or steam, and historic preserved engines not usually on display could be seen, as could lines of engines awaiting scrapping. Derby Works in August 1967, for example, had Britannia Pacific No 70013 *Oliver Cromwell* on display just 12 months before it would haul BR's last steam train, while the scrap line included tank engines just rendered redundant from the Cromford & High Peak line, plus a line of historic diesels, LMS No 10000, and SR Nos 10201/2/3.

Open Days were perhaps less prevalent in the BR blue era,

but one event cannot be overlooked – the historic gathering of the last Deltics at Doncaster Works shortly after their withdrawal. Doncaster had also held an event to commemorate the 125th anniversary of the works with a major display mainly of steam engines.

Nevertheless, major events were held all over Britain from Inverness to Basingstoke and, as sectorisation and preservation made their influences felt, some huge gatherings of modern traction exhibits of all shapes, sizes, ages and colours, were arranged, often at locations which would not normally see any quantity of locomotives in recent times. A particularly popular annual event for many years was at Mantle Lane, Coalville, with trainloads of enthusiasts arriving at temporary wooden platforms in long DMU sets.

Such events proved extremely popular with enthusiasts and with the general public looking for an afternoon out with a difference, and in recent times both Crewe and Doncaster works have seen great gatherings of locomotives and stock attracting huge crowds.

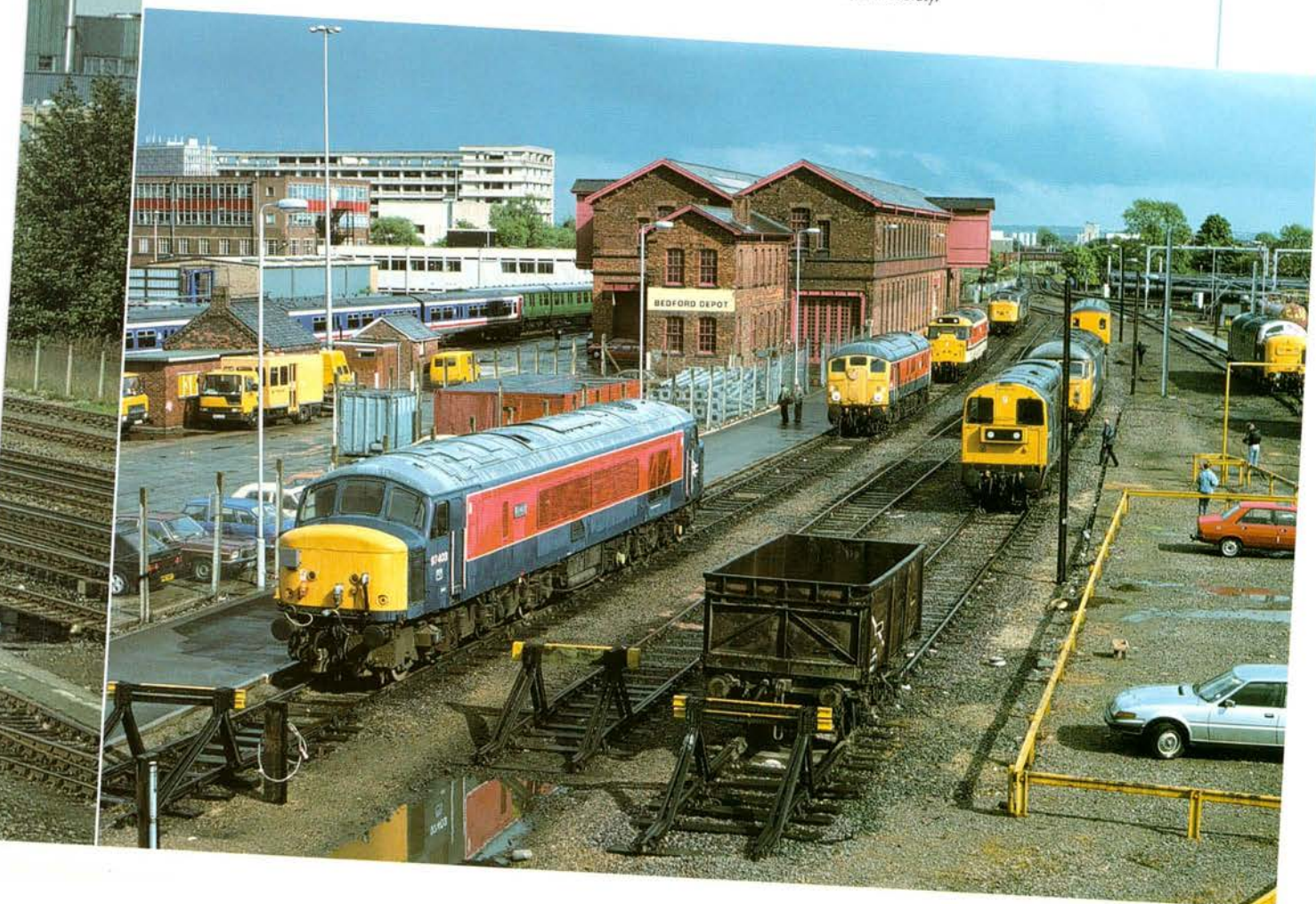




Left Deltic D9000 *Royal Scots Grey* heads a line-up of assorted traction at Basingstoke on 27 September 1987.

Below Class 46 *Ixion* in Derby Research Centre livery on display at Bedford on 29 May 1988.

Above Outside the erecting shop at Crewe Works are a variety of classes associated with Crewe, prior to the 'Great Gathering' open weekend of September 2005, including Class 40 No 40135 owned by the Class 40 Preservation Society.





Top Railfreight Distribution-liveried Class 31 No 31160 passes Wrawby Junction, Barnetby, with an engineers train 21 February 1990

Above Repainted in green by Tinsley depot, and usually kept as a pair, Class 20s Nos 20064 and 20030 pass the signalbox at Wrawby Junction with an engineers' train on 21 February 1990

Main Iron ore trains run continuously between Immingham Docks and Scunthorpe steelworks, and for many years these were in charge of pairs of Class 37s. No 37351 and No 37377 approach Barnetby with empties from Scunthorpe on 8 September 1989

Above right Ultimately, Class 60s and 66s took over all workings in the area. Loadhaul-liveried No 60025 *Joseph Lister* passes the station.

South Humberside

The Manchester Sheffield & Lincolnshire Railway built the line to South Humberside and created Immingham Docks in the early part of the 20th century. Being an island, docks always played a major part in Britain's economy, with imported raw materials being transported from dockyards around the country by rail, and finished products for export being transported by rail in the other direction. Motorway construction, a long period of industrial unrest and more recently the opening of the Channel Tunnel have led to rail's proportion of this traffic being dramatically reduced, much imported and exported goods now being moved in containers, with Southampton and Felixstowe handling virtually all the rail-borne container traffic. Hunterston near Glasgow now deals only with coal, and even such traditional centres as London and Liverpool see only minimal rail freight traffic bound for the docks. An exception to the general trend is Immingham, which still handles large quantities of coal, iron ore, and petroleum products, most moving inland by rail. Virtually all of this is, of course, imported raw material, and watching the flow of tonnage moving inland from Immingham compared to the minimal amount of finished steel for export, raises questions about the country's balance of payments. All traffic from Immingham passes through the country junction station of Barnetby, and this location with its



adjacent three-way junction at Wrawby still sports one of the finest arrays of mechanical signalling to be seen in Britain in the 21st century.

Class 60s and 66s now share freight haulage, the 60s seen particularly on the continuous flow of iron ore trains to Scunthorpe. In the 1980s though, an almost unequalled variety as well as quantity of motive power was evident as Class 20s, 31s, 37s, 47s and 56s trundled back and forth against a traditional railway background.

Even with the now predictable motive power, Barnetby station is rarely without its platform-end enthusiasts, soaking up the atmosphere of the old-style railway which is now so close to disappearing.





Rolling Stone

One of the most regrettable main line railway closures in England was the Derby – Manchester route in June 1968. In fact, only a short section in the High Peak district of Derbyshire closed completely, from north of Matlock to just beyond Millers Dale. Buxton remained served by suburban trains from Manchester over the LNWR route, the town also having been the terminus of a branch from the Midland Main Line at Blackwell Mill near Millers Dale. Stone traffic had always been an important source of revenue for the railways in the area, and this traffic, much of it aggregates for road building, has expanded since 1968. The stone trains head north from the two neighbouring quarries at Tunstead and Peak Forest, on the main line north of Blackwell, to Chinley South Junction where they turn left for Manchester or right to run through the Hope Valley, then to Sheffield or south to the Midlands or East Anglia. Even the south-to-east chord at Chinley was removed but reinstated, but even so the frequent and heavy trains take a circuitous route because of the missing 15 miles of the Matlock route.

From Tunstead, trains also head south, then west along the branch to Buxton, where they reverse in the yard to take the LNWR route south to Dowlow quarry, actually on the original Cromford & High Peak line. Locomotives were

stabled at Buxton shed but capacity problems on the branch led to stabling now being concentrated at Peak Forest sidings.

Class 25s were associated with the stone trains, especially limestone to Northwich, but something a bit heavier took over in the shape of pairs of Class 37s. Class 20s, 31s 45s, 46s and 47s have also helped out over the years, but eventually Class 60s became the order of the day, and later the ubiquitous EWS Class 66s started to feature as well.

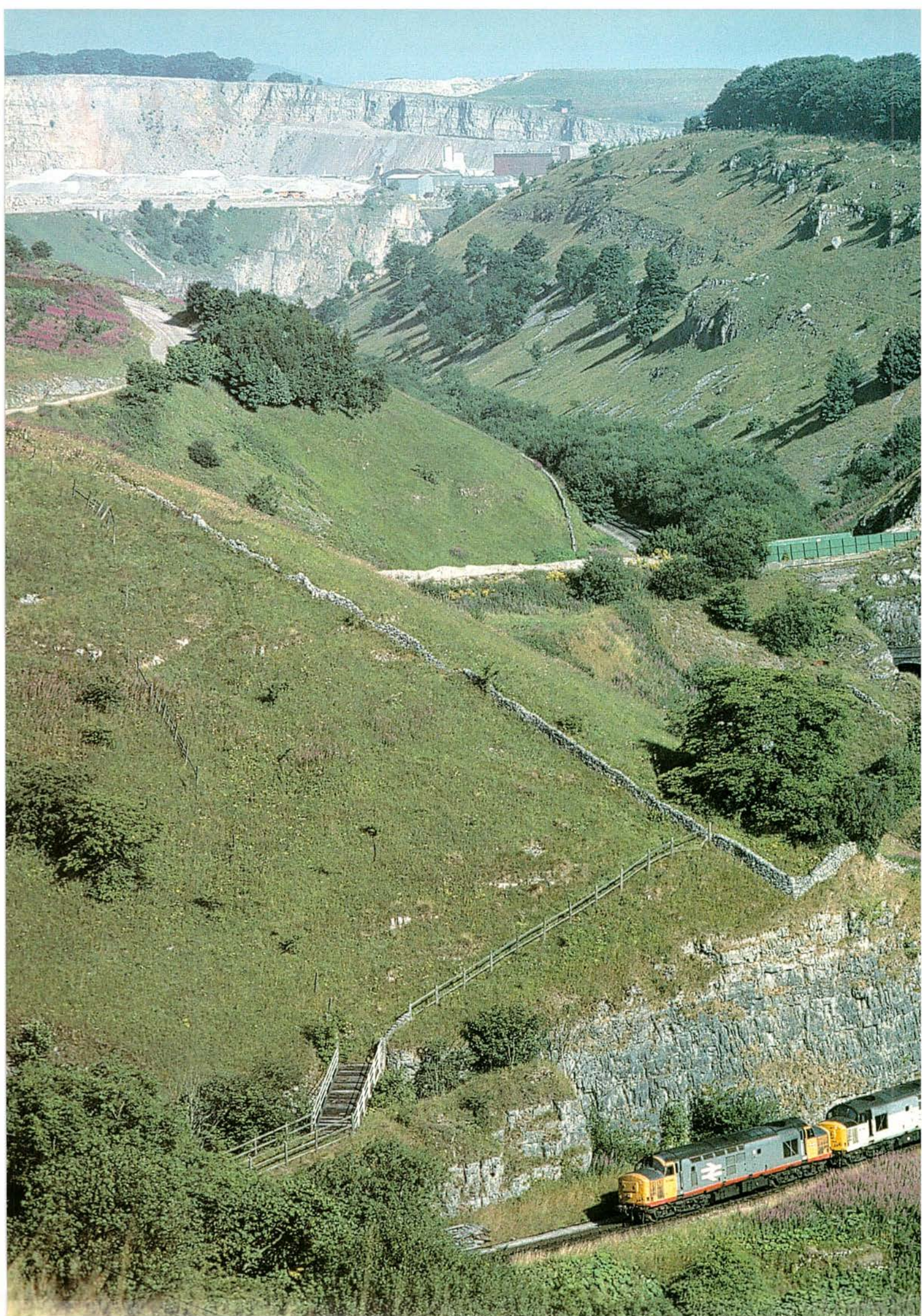
Above The Tunstead – Northwich limestone trains were notable for having worked for 365 days per year from the mid-1930s, with Type 2 haulage for many years. No 25061 passes Chinley South Junction on 15 October 1975, at which time the south-to-east curve had been removed.

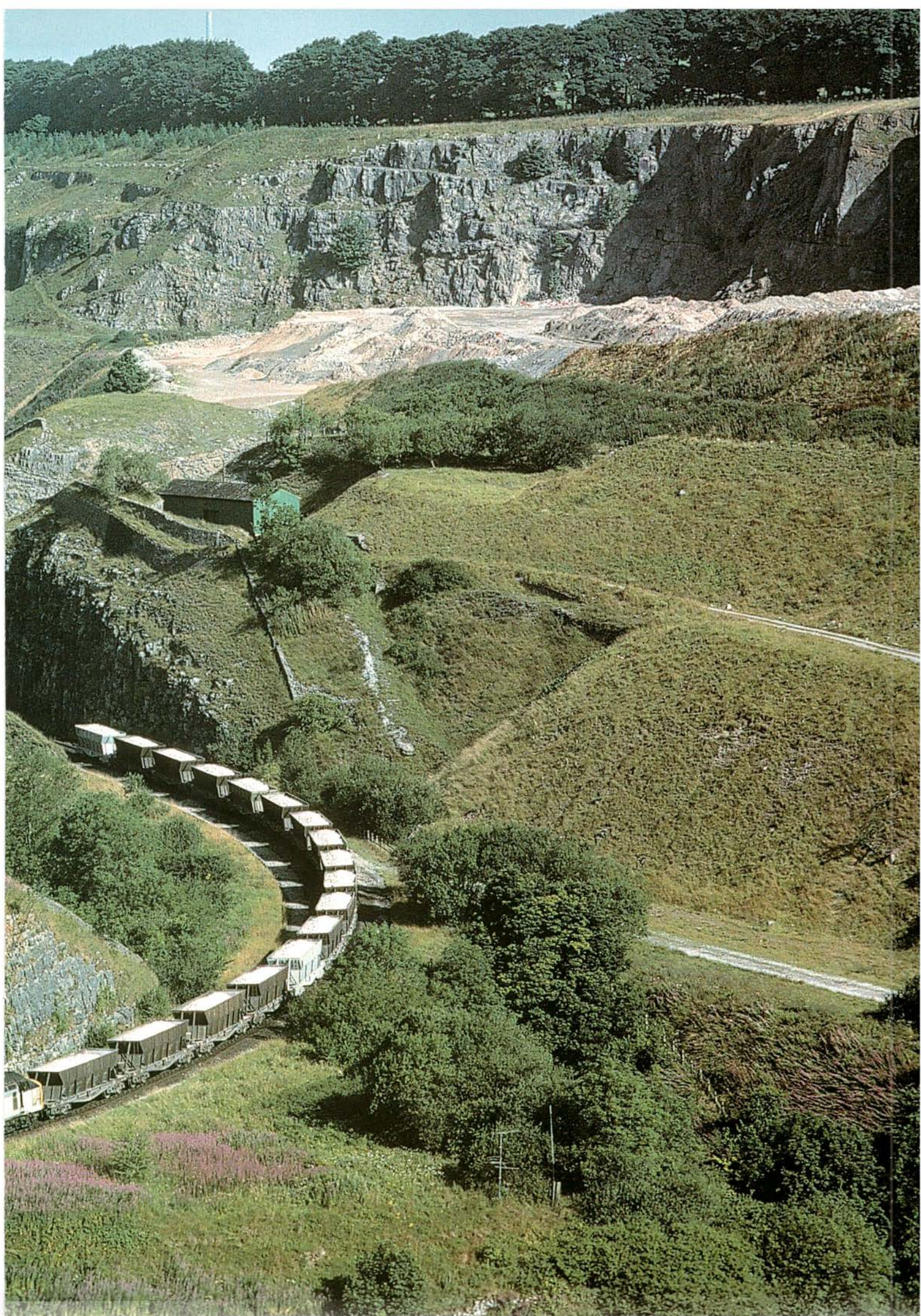
Above right Class 37 No 37684 and No 37681 arrive at Peak Forest with empties on 7 Sep 1988.

Right Nos 37677 and 37688 *Great Rocks* start a heavy-loaded train on the 1-in-100 away from Peak Forest on 2 March 1990.

Over page Nos 37684 and 37682 round the curve at Blackwell on 10 August 1989 with a train for Hindlow. This curve gives access from the main line through Peak Forest, to Buxton. The main line and the Millers Dale to Buxton side of the triangle were lifted on closure in 1968.









Privatisation

Undoubtedly the greatest upheaval to take place on the railways in recent years was privatisation, when from 1 April 1994 the companies which operated trains were separated from the company which owned the track and infrastructure, and private companies were given open access to the railway system.

The process had started much earlier, with the operation of privately-owned freight trains, coaching stock and preserved steam engines, but then came the Hunslet-Barclay Class 20s on weedkilling trains, Foster Yeoman's Class 59s on stone traffic and the National Power Class 59/1s on coal traffic.

After 1 April 1994, even BR businesses such as Inter-City, Loadhaul and Transrail were sold, either whole or in smaller units. The now familiar names of GNER, Virgin Trains, Arriva, First Great Western and of course EWS were born. These companies bought franchises to operate train services on nominated routes for agreed periods of time, some of which have now expired and passed to new train operating companies. In many cases, stock is owned by leasing companies and leased to the Train Operating Companies as opposed to being directly owned.

To the enthusiast though, what was more interesting and probably unforeseen by many, was the fact that anyone within reason could use a second-hand Class 31 or 47, or even a Western or a Deltic, on revenue-earning main line trains, and not necessarily just railtours, subject to normal safety and reliability considerations.

'Open Access' meant just that; BR had always held out against privately-preserved diesels, but Railtrack could not. A second golden age of diesel traction was coming, not quite like 10 years earlier, but there would be some sights and sounds that no-one had expected to experience again.

Privatisation is a political hot potato of course, the problems of Railtrack and its replacement by Network Rail, and some very high-profile train crashes, have received disproportionate publicity as a result. Overall though, passenger travel has boomed since 1994, and the freight sector can certainly boast of considerable success. Maybe this would have happened anyway, it depends on your point of view, but Deltics could never have returned to scheduled services to the south coast if it had not been for privatisation!



Main D9000 *Royal Scots Grey* speeds past Fenny Compton with the Virgin Trains Ramsgate – Wolverhampton train in August 1998.

Top No 37425 *Sir Robert McAlpine/Concrete Bob* departs from Caerphilly with an Arriva Trains Wales Rhymney – Cardiff train on 9 July 2005. The locomotive is on hire from EWS, but restored to large-logo BR blue livery.

Above One of the earliest examples of non-BR owned traction on the main line was the fleet of Class 20s operated by Hunslet-Barclay on weedkilling duties. No 20902 *Lorna* is on the Fletton branch leading to the Nene Valley Railway on 22 April 1993.

Class 66



'Sheds'



General Motors Co-Co

What led to the almost total demise of the British locomotive building industry was privatisation. When the railway companies were sold to the highest bidders, it was clear that some of the new owners could easily be foreign. Wisconsin Central bought the entire freight business of British Railways, and formed the company English Welsh & Scottish Railways. There had not been much recent investment in new freight locomotives and EWS inherited a real hotch-potch of long-in-the-tooth classes. Being an American-owned company, it was quick to buy 250 off-the-shelf diesels from GM.

Externally they were virtually identical to the well-established but still small fleet of Class 59s, which suddenly became far less interesting as a result. They were a direct development of the Class 59s and equally successful. In contrast to Britain's last product, the Class 60, EWS saw all 250 Class 66s in service within just over two years with virtually no problems encountered.

They are certainly no favourites with the enthusiasts, as they have rendered virtually all other classes extinct and now virtually monopolise freight traffic in large parts of the country. The monotony is relieved though, by the fact that Freightliner also invested in some Class 66/5s, which are green, then GBRf bought some, which are blue. So 66s can turn up anywhere in red, green or blue, and on top of this are smaller fleets such as Direct Rail Services, Eddie Stobarts, Shanks & McEwens or Metronet. There is even a black one, in the livery of the Mediterranean Shipping Company.

Above A Freightliner Class 66/5 leaves Eggborough power station with coal empties on 3 November 2006.

Above left The ubiquitous EWS Class 66 No 66182 passes through Lincoln on the centre road with coal empties for Immingham.

Left A GBRf Class 66/7 passes through Dent with the northbound gypsum train for Kirkby Thore on 2 November 2006.

Class 67



General Motors Type 5 Bo-Bo

What will probably be the last new class of main line locomotives built for service in Britain for very many years, has probably been the most disastrous, but through no fault of the design.

When dieselisation first took hold in the late 1950s and early 1960s, diesel locomotives were all of mixed traffic capability, and few classes were considered exclusively freight or passenger designs. That situation only really changed with the advent of the various Type 5 freight designs, which were limited in terms of top speed.

Meanwhile, locomotive-hauled passenger trains were a disappearing breed and by the time of privatisation, the surviving locomotives suitable for any type of high speed work were getting very long in the tooth.

While regular passenger services were allocated to various new franchises to a number of train operating companies, most freight haulage was sold off to EWS, with everything else. This meant that EWS had virtually a nationwide monopoly on the operation of all special passenger trains including the Royal Train, plus parcels trains, Travelling Post Offices and anything which was not a timetabled passenger service.

To haul its trains, it inherited probably the worst of the remaining locomotives, most of which, apart from the Class 56s, 58s and 60s, dated back to the early days of dieselisation.

While EWS quickly invested in 250 Class 66s, these like the

56s, 58s and 60s were not passenger engines; they were certainly unsuitable for jobs which entailed high-speed running, as was becoming ever more essential, especially for the mail traffic.

EWS still had to rely on 35-year-old Class 37s and 47s for many of its most important trains.

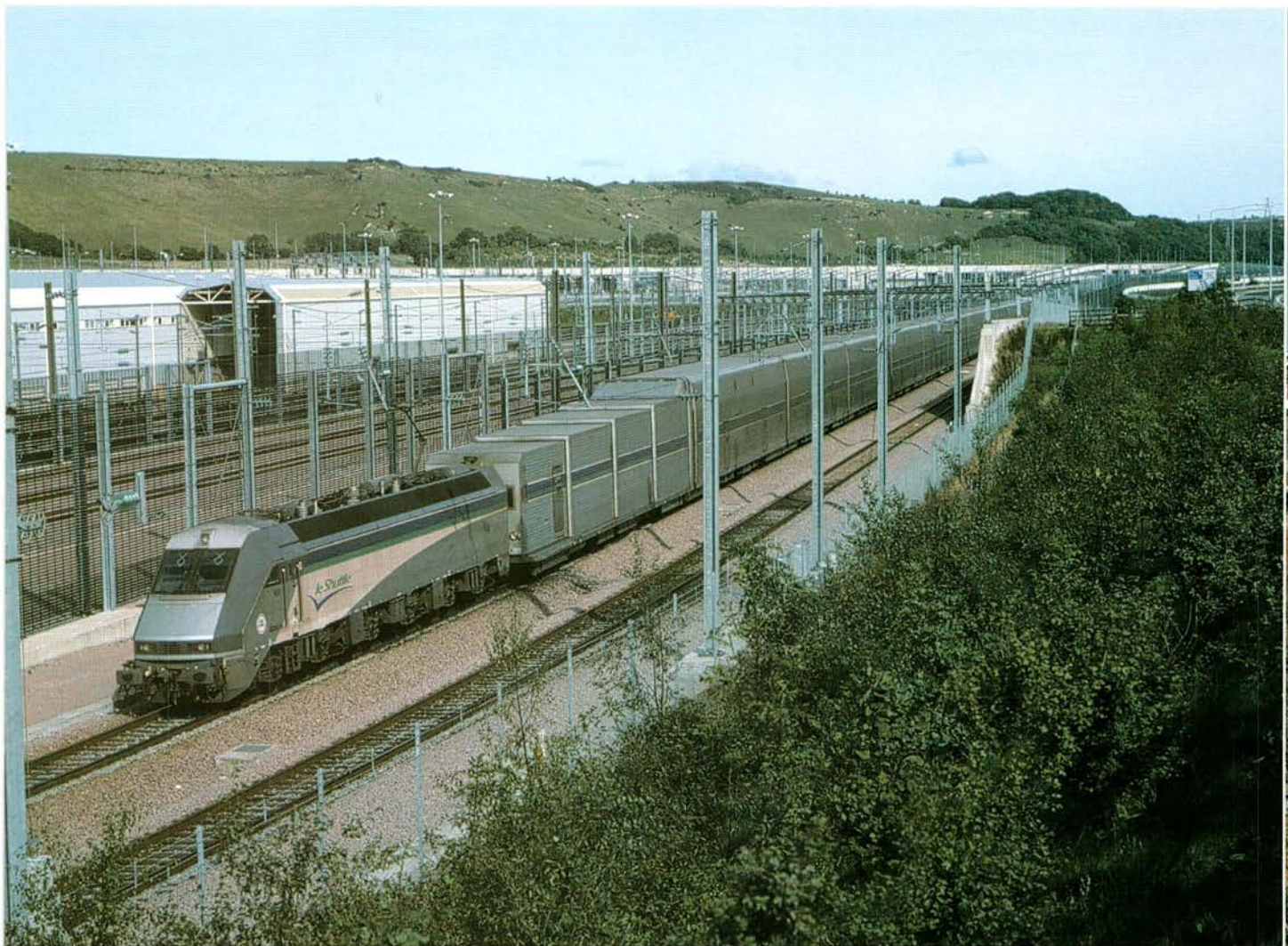
The Class 67 was seen as the solution, a small fleet of 30 125mph Bo-Bos, with the same engines as the Class 66s, which could accelerate mail trains and take over Royal Trains, sleeper and special passenger trains.

Built in Spain by Alstom in Valencia under licence to GM, they were a lighter and higher-speed version of the Class 66, but when EWS lost the Royal Mail franchise, the Class 67s were virtually surplus to requirements after only five years. Meanwhile, TOCs sprung up to threaten EWS's monopoly of non-timetabled passenger trains, and second-hand Class 47s, often working in pairs, now directly compete for business with the state-of-the-art Class 67s. The latter ought to be more reliable and certainly faster, but the economics of running such engines on just cut-price Saturday day trips really do not add up. Many Class 67s now eke out a living as 'Thunderbirds', on standby against failures on inter-city routes, or even working the kind of freight trains they were specifically not designed for, sometimes even in pairs.

Above Class 67 No 67010 leaves Scarborough and passes the reinstated turntable with a tour formed of Anglia Railways' stock returning to Norwich.



A class 60 heads south on the East Coast Main Line past Eggborough power station with a coal train. BRIAN SHARPE



Above Le Shuttle which carries passenger and road-borne freight traffic through the tunnel is powered by unique Bo-Bo-Bo locomotives.

Right A Eurostar set passes Wandsworth Road on 14 March 2007. Completion of the Channel Tunnel Rail Link will lead to these units being seen much less at this familiar south London location.

Below Class 92 No 92009 heads a train of steel slabs through Wandsworth Road, heading for the Channel Tunnel.





The Channel Tunnel

The Channel Tunnel was first proposed by the Great Central Railway early in the last century, and excavations did commence. Much later in 1994 the 20th century version did actually open for business and was perhaps the most interesting development in Britain's railway system for the modern traction enthusiast who had little interest in the latest multiple units and US-built Type 5 diesels being introduced elsewhere.

The tunnel itself is not easily accessible for enthusiasts, but the trains running to it, were immediately of interest, both the Eurostar sets and the Class 92 electrics. All the plans went wrong of course, and the Eurostars have never run north of London on Channel Tunnel services and look unlikely to ever do so. Nevertheless, the Channel Tunnel Rail Link is being built, again privately financed, and what little of the route is visible, makes a fascinating contrast with the 19th century routes alongside.

The tunnel might be considered a white elephant, but it is a success; the only downside is the residual debt which has had to be refinanced. It cost far more than envisaged and can never recoup those costs, but it does fulfil a very significant transport need.

The tunnel is a political hot potato of course, as it has become a route to Britain for illegal immigrants and asylum-

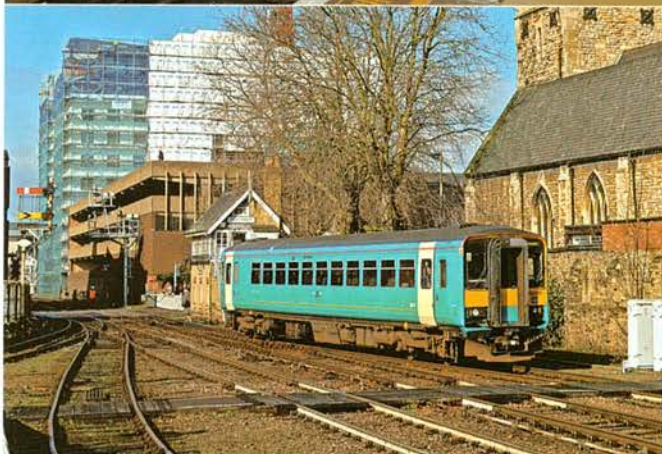
seekers. Railway operations may be difficult for British enthusiasts to see much of, but apparently not too difficult for eastern European refugees on the French side.

The French of course built a network of high-speed routes, so Eurostars run at 200kph to their end of the tunnel, speed under the water and emerge onto South Eastern & Chatham Railway outer suburban routes, which have seen little real investment since the Grouping of 1923, apart from 750v dc third-rail electrification.

The CTRL had to be built to correct this imbalance, running across Kent either in tunnel or on viaduct, under the Thames near Dartford, and under east London, emerging briefly where Stratford shed used to be, before crossing the ECML near King's Cross goods yard to terminate in a much rebuilt and enlarged St Pancras.

The construction itself has attracted enthusiast interest, with Class 14 diesel-hydraulic 0-6-0s, considered surplus to requirements by BR in 1972, returning to commercial service at a number of locations.

The whole project has been a triumph of modern engineering, bringing Britain much closer to Europe than it has ever been, and the Eurostar is perhaps the one modern multiple-unit train which the traditional railway enthusiast still pays some attention to.



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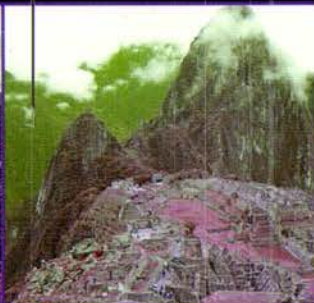


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